Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services	)	WT Docket No. 00-19
	)	
Telecommunications Industry Association Petition for Rulemaking	)	RM-9418

REPORT AND ORDER

Adopted: July 18, 2002 **Released: July 31, 2002**

By the Commission:

TABLE OF CONTENTS

Paragraph #

I. INTRODUCTION AND EXECUTIVE SUMMARY

1. In the *Report and Order* in WT Docket No. 94-148 and CC Docket No. 93-2, the Commission consolidated the rules for the common carrier and private operational fixed (POFS) microwave services contained in Parts 21 and 94, respectively, of the Commission's Rules to create a new Part 101.[1] The new consolidated Part 101 reduces or eliminates the differences in processing applications between common carriers and POF microwave service licensees, and furthers regulatory parity between these microwave services.[2] On February 14, 2000, the Commission released the *Memorandum Opinion and Order and Notice of Proposed Rule Making* in this proceeding.[3] In the *NPRM*, the Commission proposed eliminating duplicative, outmoded, or otherwise unnecessary regulations[4] in order to further the work begun by the consolidation of Parts 21 and 94 into a single Part 101 in the *Part 101 R&O* and the implementation of the Universal Licensing System (ULS) for wireless applications.[5] Applicants,

[1]Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, *Report and Order*, WT Docket No. 94-148, 11 FCC Rcd 13449 (1996) (*Part 101 R&O*).

[2]*See id.* at 13451-53 ¶¶ 2-6.

[3]Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, *Memorandum Opinion and Order and Notice of Proposed Rule Making*, WT Docket No. 94-148, 15 FCC Rcd 3129 (2000) (*Part 101 MO&O and NPRM*).

[4]*Id.* at 3131 ¶ 2.

[5]*Id*. The ULS was developed to eliminate the need for wireless carriers to file duplicative applications, and increase the accuracy and reliability of licensing information. *See* Biennial Regulatory Review -- Amendment of Parts 0, 1, 13, 22, 24, 26, 27, 80, 87, 90, 95, 97, and 101 of the Commission's Rules to Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services, *Report and Order*, WT (continued….)

licensees and related industries were invited to examine these rules and procedures and offer their views and explanations of ways to streamline them and to make sure that the regulations conform with the Communications Act of 1934, as amended (Act).[6]

2. In this *Report and Order*, we take further actions to streamline, clarify, and update our Part 101 Rules. These actions will provide increased flexibility to licensees, ensure greater and more efficient use of the bands regulated under Part 101, and ensure that our Rules are consistent with international agreements. The significant rule changes and clarifications that we adopt in this *Report and Order* to streamline Part 101 are:

- We permit POFS licensees to lease reserve capacity to common carriers for their common carrier traffic. Further, we grandfather certain POFS licensees who formerly carried private traffic now classified as common carrier traffic.

- We clarify that conditional authorization in the 23 GHz Band is permitted only on the frequency pairs identified in Section 101.147(s), and only if the maximum Effective Isotropic Radiated Power (EIRP) utilized does not exceed 55 dBm.

- We allow conditional operation in the 952.95-956.15 and 956.55-959.75 MHz bands.

- We clarify and correct the frequency tolerance table in Section 101.107(a) in accordance with the proposal contained in the *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3153 ¶ 45.

- We amend the EIRP table in Section 101.113(a) to divide the 10.55-10.68 GHz band into two separate bands: 10.55-10.6 GHz with the maximum power of 55 dBW and 10.6-10.68 GHz with a maximum power of 40 dBW.

- We permit any Local Multipoint Distribution Service (LMDS) antenna polarization away from service boundaries.

- We amend Section 101.507 to provide the frequency tolerance of ±0.0001% for Digital Electronic Message Service (DEMS) Nodal Stations and ±0.0003% for DEMS User Stations in the 10,550-10,680 MHz band.

- We modify the Part 101 emission mask to make it less severe for LMDS by adopting for LMDS the same mask requirements that we did for the 24 GHz service, as outlined in Section 101.111(a)(2)(iv).

- We modify the reference bandwidth in Section 101.111(a)(2)(iii) from 4 kHz to 1 MHz for consistency with Section 101.111(a)(2)(ii) and Appendix S3 of the International Radio Regulations.

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Docket No. 98-20, 13 FCC Rcd 21027, 21031 ¶ 9 (1998) (*ULS Proceeding*); *see also* Biennial Regulatory Review -- Amendment of Parts 0, 1, 13, 22, 24, 26, 27, 80, 87, 90, 95, 97, and 101 of the Commission's Rules to Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services, *Notice of Proposed Rulemaking*, WT Docket No. 98-20, 13 FCC Rcd 9672 (1998).

[6] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3150-71 ¶¶ 36, 38-41, 44-45, 47-51, 53-57, 61, 65-67, 69, 73-74, 77, 79, 81-84.

3. Additionally, in response to the Telecommunications Industry Association (TIA) Petition for Rulemaking[7] relating to the 10 GHz and 23 GHz bands, we adopt the following rule changes:

- We specify a channel plan for the 23 GHz band in our Rules.
- We adopt frequency tolerance standards for both digital and analog radios operating in the 23 GHz band.
- We extend a 1 bps/Hz spectrum efficiency rate requirement to the 23 GHz band for digital transmitters.
- We allow the use of smaller antennas in the 10 GHz and 23 GHz bands.

II. BACKGROUND

4. Communications services that use the microwave spectrum[8] for fixed services include common carriers (formerly regulated by Part 21); common carrier MAS (Part 22);[9] international point-to-point operators (Part 23); space station and satellite earth station operators such as Digital Audio Radio Service (DARS) (Part 25); AM, FM, and TV broadcasters for studio-to-transmitter links (STL) or inter-city relays (ICR) (Part 74); CATV operators (Part 78); multipoint Distribution Service (MDS) operators (Part 21); and POFS users (formerly Part 94).[10] Fixed microwave spectrum is primarily used to deliver video (such as Local Television Transmission Service (LTTS)), audio, data, and control functions for other specific communications services, such as LMDS and DEMS (DEMS), from one point and/or hub to other points and/or subscribers for distribution. A convergence of common carrier and POFS technical standards has occurred over the last decade as a result of several rulemaking proceedings.[11] In addition,

[7]TIA Petition for Rulemaking, RM-9418 (filed Mar. 5, 1998) ("TIA Petition").

[8]Part 101 defines microwave frequencies as those frequencies located at 890 MHz or above. *See* 47 C.F.R. § 101.3; *see also* Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, *Notice of Proposed Rulemaking*, WT Docket No. 94-148, 10 FCC Rcd 2508, 2509 n.2 (1994).

[9]Common carrier MAS are point-to-multipoint systems governed by Part 22 of the Rules. *See* 47 C.F.R. § 22.621; *see also* Amendment of the Commission's Rules Regarding Multiple Address Systems*, Further Notice of Proposed Rule Making*, WT Docket No. 97-81, 14 FCC Rcd 10744, 10744 n.2 (1999); Amendment of the Commission's Rules Regarding Multiple Address Systems, *Notice of Proposed Rule Making*, WT Docket No. 97-81, 12 FCC Rcd 7973, 7974 n.1 (1997).

[10]*Part 101 R&O*, 11 FCC Rcd at 13451 ¶ 2.

[11]*See, e.g.,* Amendment of Parts 1, 21, 22, 74 and 94 of the Commission's Rules to Establish Service and Technical Rules for Government and Non-government Fixed Service Usage of the Frequency Bands 932-935 MHz and 941-944 MHZ, *First Report and Order*, Gen. Docket No. 82-243, 6 FCC Rcd 4320 (1991); Establishment of a Spectrum Utilization Policy for the Fixed and Mobile Services' Use of Certain Bands Between 947 MHz and 40 GHz, *Third Report and Order*, Gen. Docket No. 82-334, 2 FCC Rcd 1050 (1987); Authorizing Private Carrier Systems in the Private Operational-Fixed Microwave Radio Service, *First Report and Order*, PR Docket No. 83-426, 57 Rad. Reg. 2d (P&F) 1486 (1985); Use of Radio in Digital Termination Systems and in Point-to-Point Microwave Radio Systems for Provision of Digital Electronic Message and Other Specific Services, *Second Report and Order*, Gen. Docket No. 79-188, 54 Rad. Reg. 2d (P&F) 1091 (1983); Amendment (continued….)

the reallocation of five bands above 3 GHz, on a co-primary basis, to common carrier and POFS microwave licensees relocating from the 1850-1990, 2110-2150, and 2160-2200 MHz bands (2 GHz bands) has significantly impacted fixed microwave services.[12] As a result of the reallocation of spectrum for emerging technologies and the associated increase in frequency band-sharing, common carrier and private microwave industry members united to develop joint interference standards and coordination procedures.[13]

5. Consequently, on February 8, 1996, the Commission adopted the *Part 101 R&O* and thereby created one comprehensive rule part setting forth application processing rules, technical standards, and operational requirements for microwave spectrum, including DEMS (a two-way end-to-end fixed radio service utilizing digital termination systems for the exchange of digital information), the POF Point-to-Point Microwave Service (a private radio service rendered on microwave frequencies on fixed and temporary fixed stations between points within the United States or between points in the United States and points in Canada or Mexico), the Common Carrier Fixed Point-to-Point Microwave Service (a common carrier public radio service rendered on microwave frequencies on fixed and temporary fixed stations between such points), and LTTS (a public radio communication service for the transmission of television material and related communications).[14] Soon thereafter, the Commission adopted Part 101 rules for LMDS (a fixed one-way or two-way point-to-point or point-to-multipoint radio service that may be interconnected with the public switched telephone network).[15] In 1999, the Commission adopted rules to maximize the use of spectrum designated for MAS (point-to-multipoint, multipoint-to-point radio communications service).[16] On February 14, 2000, the Commission released the *Part 101 MO&O and NPRM* to clarify the rules adopted in the *Part 101 R&O* and to propose additional rule changes.[17]

6. The *Part 101 MO&O and NPRM* therefore modified certain Part 101 provisions in response to a number of petitions for reconsideration and clarification of the *Part 101 R&O* and adopted other changes to improve the clarity and completeness of Part 101. The *Part 101 MO&O and NPRM* modified

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of Part 94 of the Commission's Rules and Regulations to Facilitate Operation of Low Power, Limited Coverage Systems in the 22.0-23.6 GHz Band, *First Report and Order*, PR Docket No. 79-337, 81 FCC 2d 140 (1980).

[12]*See* Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, *Second Report and Order*, ET Docket No. 92-9, 8 FCC Rcd 6495 (1993).

[13]For a more comprehensive description of the microwave services and the history of this proceeding, see *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3134-36 ¶¶ 7-9.

[14]*See Part 101 R&O*, 11 FCC Rcd at 13451 ¶ 1, 13497-505; *see also* 47 C.F.R. § 101.3.

[15]*See* Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, *Second Report and Order*, *Order on Reconsideration*, *and Fifth Notice of Proposed Rulemaking*, CC Docket No. 92-297, 12 FCC Rcd 12545 (1997); Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, *First Report and Order and Fourth Notice of Proposed Rulemaking*, CC Docket No. 92-297, 11 FCC Rcd 19005 (1996).

[16]*See* Amendment of the Commission's Rules Regarding Multiple Address Systems, *Report and Order*, WT Docket No. 97-81, 15 FCC Rcd 11956 (2000).

[17]*See Part 101 MO&O and NPRM*, 15 FCC Rcd at 3131-34 ¶¶ 1-6.

Parts 24, 25, 74, and 78 to reflect the consolidation of former Parts 21 and 94 into Part 101. In the *Part 101 MO&O and NPRM*, the Commission declined to change its rule prohibiting POFS licensees from using the 11 GHz microwave band as the "final link" in the delivery of video programming.[18] The Commission also opted in the *Part 101 MO&O* to retain the rule that prohibits POFS from carrying common carrier traffic.[19] In addition, the Commission decided not to reinstate the requirement that POFS applications be placed on public notice thirty days prior to the date that the application is granted.[20]

7. As part of the *NPRM,* the Commission generally invited applicants, licensees, and related industries to examine the recently consolidated Part 101 and offer their comments about ways to streamline the rules and ensure that the rules conform with the Communications Act of 1934, as amended. Specifically, the *NPRM* sought comment on whether to grandfather POFS licensees that formerly carried private traffic now classified as common carrier traffic or eliminate the prohibition on POFS licensees offering common carrier services; to revise Parts 74, 78, 90, and 101 for shared use of certain frequency bands; to delete several unnecessary or redundant sections of the rules concerning forms, notifications, and technical standards; to clarify conditional operations in the four low power frequency pairs in the 23 GHz band in Section 101.31(b)(vii); to update the transmitter frequency tolerance table in Section 101.107; and to allow conditional operation in the 952.95-956.15 and 956.55-959.75 MHz bands.[21] In the *NPRM*, the Commission also asked commenters to address a Petition for Rulemaking concerning the 10 GHz and 23 GHz bands that was filed on March 5, 1998 by the Telecommunications Industry Association (TIA).[22] TIA filed the Petition because it believes that the industry operating in the 23 GHz band has sufficiently developed to permit the Commission to adopt more complete technical standards without stifling further growth.[23] TIA also contends that the Commission should amend its Rules to authorize conditional licensing in the 23 GHz band[24] and to permit the use of smaller antennas in the 10 GHz and 23 GHz bands.[25] TIA argues that such revisions would make the bands more attractive to fixed microwave users and thereby alleviate overcrowding in other bands.[26] Because of the nexus to issues already being considered by the Commission in this proceeding, the *NPRM* asked to parties to comment on the TIA Petition.

[18] *See id.* at 3138 at 13.

[19] *See id.* at 3141 ¶ 19.

[20] *See id.* at 3138-39 ¶ 14.

[21] *See id.* at 3132-33 ¶ 3.

[22] *See id.* at 3158-65 ¶¶ 58-73.

[23] *See id.* at 3160-63 ¶¶ 62-69.

[24] *See id.* at 3158-60 ¶¶ 59-61.

[25] *See id.* at 3163-65 ¶¶ 70-73.

[26] *See id.* at 3158 ¶ 58.

III. DISCUSSION

A. Streamlining Part 101

1. POFS licensees' carriage of common carrier traffic

8. Background. In the *Part 101 R&O*, the Commission eliminated the restriction on the use of common carrier transmitters for non-common carrier purposes.[27] Licensees operating common carrier stations now may provide private services at the same location without constructing duplicative facilities.[28] However, the Commission retained its rule prohibiting stations licensed as private systems from offering common carrier communications services or leasing reserve capacity to common carriers for their common carrier traffic.[29] The Commission pointed to the increased flexibility that it had given common carriers, and suggested that private licensees desiring to carry common carrier traffic as well as internal communications become common carrier licensees.[30] The Commission also declined to eliminate this restriction in the *MO&O*, on the grounds that it lacked a sufficient record,[31] but sought comment in the *NPRM* on whether to eliminate the rule.[32] In this regard, the Commission noted that many private microwave systems are owned by petroleum companies, utility companies, or government entities that do not want to become, or, in some cases, may be prohibited by law from becoming, common carriers.[33]

9. In addition, the Commission noted that many land mobile radio licensees with wide area communication systems use operational fixed microwave systems to transmit communications between base stations in their systems.[34] In some cases, the land mobile radio licensee is also the licensee of the microwave facilities.[35] In other cases, land mobile radio licensees lease excess capacity from existing microwave systems.[36] If, however, the communications (including any land mobile communications) being carried on the microwave system is common carrier traffic, our Rules require that the microwave system be licensed as a common carrier.[37] When the Commission reclassified many land mobile radio licensees as Commercial Mobile Radio Services (CMRS), *i.e.,* common carriers, there was an

[27] *Part 101 R&O*, 11 FCC Rcd at 13466 ¶ 39.

[28] *Id.*

[29] *Id.* at 13467 ¶ 42. *See also* 47 C.F.R. § 101.603(b)(1).

[30] *Part 101 R&O*, 11 FCC Rcd at 13468 ¶ 43.

[31] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3141 ¶ 19.

[32] *Id.* at 3150 ¶ 36.

[33] *Id*. at 3150 ¶ 37.

[34] *Id*.

[35] *Id*.

[36] *Id*.

[37] *See* 47 C.F.R. § 101.603(b)(1). *See also Part 101 MO&O and NPRM*, 15 FCC Rcd at 3150 ¶ 37.

unanticipated effect on some private microwave licensees.[38] For example, the reclassification of some Specialized Mobile Radio (SMR) licensees made them no longer eligible to use a POFS facility under the plain language of our Rules.[39] Many of these private microwave systems supporting SMR and other private operations are owned by petroleum companies, utility companies, or government entities that do not want to become, or, in some cases, may be prohibited by law from becoming, common carriers.[40] Consequently, the Commission sought comment on whether, in the event the general prohibition against POFS carriage of common carrier traffic is retained, to provide an exception to the rule to permit grandfathering of POF microwave systems allowing common carrier traffic over their connecting facilities, or CMRS providers that were formerly classified as private land mobile radio service providers.[41]

10. Discussion. Most of the commenters addressing the issue support eliminating the rule prohibiting stations licensed as private systems from offering common carrier communications services or leasing reserve capacity to common carriers for their common carrier traffic.[42] They argue that it is unreasonable, unduly burdensome, and unnecessary to require SMR and other former private operators to either construct and operate duplicate microwave facilities or seek service from a microwave or landline common carrier -- often in areas where such service is not readily available.[43]

11. On the other hand, SBC Communications Inc. (SBC) supports retaining the prohibition.[44] It argues that the limitation reflects the appropriate regulatory scheme because providers of similar services should be subject to the same regulatory requirements, and permitting POFS licensees to offer common carrier services without being licensed as common carriers would give then an unfair advantage.[45] SBC also asserts that allowing POFS licensees to offer common carrier services or lease reserve capacity to common carriers for their common carrier traffic would not necessarily promote more efficient use of spectrum, because this incorrectly assumes that there is no other use to which excess capacity can be put.[46]

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[38] *See* Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, *Second Report and Order*, GN Docket No. 93-252, 9 FCC Rcd 1411 (1994). *See also Part 101 MO&O and NPRM*, 15 FCC Rcd at 3150 ¶ 37.

[39] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3150 ¶ 37.

[40] *Id*.

[41] *Id.* at 3150-51 ¶ 38. As noted in the *Part 101 MO&O and NPRM*, when the Commission reclassified many land mobile radio licensees as CMRS, it rendered some licensees that used microwave frequencies to transmit communications between base stations in their systems no longer eligible to use a POFS facility. *Id*. at 3150 ¶ 37.

[42] Nextel Communications, Inc. (Nextel) Comments at 4-6; United Telecom Council (UTC) Comments at 9-10; Fixed Wireless Communications Coalition (Fixed Wireless) Comments at 24-26; Stratos Offshore Services Company (Stratos) Comments at 17-18; American Petroleum Institute (API) Comments at 5; Arizona Public Service Company (APS) Comments at 2-3; South Carolina Electric & Gas (SCE&G) Reply Comments at 2-3.

[43] Nextel Comments at 4; *see also* Fixed Wireless Comments at 25.

[44] SBC Reply Comments at 3-4.

[45] *Id*.

[46] *Id*. at 3.

12. We agree with the majority of commenters that permitting POFS licensees to lease reserve capacity to common carriers for their common carrier traffic will promote flexibility and may permit the development of common standards for common carrier and POFS microwave equipment.[47] We therefore will modify the restriction in Section 101.603(b)(1) of our Rules to permit POFS licensees to lease excess capacity to common carriers for their common carrier traffic.[48] This increased regulatory flexibility is also consistent with our efforts to facilitate secondary markets for radio spectrum that will allow and encourage licensees to make all or portions of their assigned frequencies available for other entities and uses.[49] Consistent with our policies, as may be amended in our Secondary Markets docket, Part 101 licensees leasing spectrum are expected to maintain *de facto* control in a manner consistent with Commission policy.[50] In light of the important concerns raised by SBC, however, we will retain the prohibition against POFS licensees offering their own common carrier services, without first becoming licensed as common carriers.

13. With regard to POFS licensees that choose to become licensed as common carriers, the Commission stated in the 1996 *Part 101 R&O* that it would waive the filing fee associated with the wireless application to change the regulatory status, but did not include this clarification in the final rules. The Commission proposed in the *NPRM* in this proceeding to codify this clarification in the Commission's rules. We received no comments or oppositions to this proposal. Therefore, we modify Section 101.133 of the Commission's rules to codify this clarification.[51] Private licensees who wish to become common carrier wireless licensees must ensure that they are in compliance with the provisions of the Act and Commission rules, which includes making all appropriate applications and filings with the Commission and receiving necessary Commission approval.[52] For example, as the Commission stated in the *Part 101 R&O*, applicants must file necessary tariffs and license applications.[53]

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[47]Fixed Wireless Comments at 24-26; Nextel Comments at 4-6.

[48] We note that the leasing capacity from POFS licensees will not affect regulatory obligations of common carriers.

[49]*See* Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets, *Policy Statement*, 15 FCC Rcd 24178 (2000); Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, *Notice of Proposed Rule Making*, WT Docket No. 00-230, 15 FCC Rcd 24203 (2000) (*Secondary Markets NPRM*).

[50]*See Secondary Markets NPRM*, 14 FCC Rcd at 24205 ¶ 3 (citing *Intermountain Microwave*, 12 FCC 2d 559 (1963)).

[51]We note, however, that all regulatory fees, such as those associated with Section 214 authorizations are still required.

[52]For example, we note that applicants seeking to become common carrier wireless licensees must comply with the foreign ownership restrictions in Section 310(b). In addition, carriers seeking to provide common carrier international services must have the appropriate authorization pursuant to Section 214 of the Act.

[53]We note that the Commission has completely detariffed the domestic the domestic interexchange services of CMRS providers and the international services of CMRS providers. *See* Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, *Second Report and Order*, 9 FCC Rcd 1411 (1994) (*CMRS Second Report and Order*). See Personal Communications Industry Association's Broadband Personal Communications Services Alliance's Petition for Forebearance for Broadband Personal Communications Services, *Memorandum Opinion and Order and Notice of Proposed Rulemaking*, 13 FCC Rcd 16857 (1998) (*CMRS Forebearance Order*). *See* In the Matter of 2000 Biennial Regulatory Review; Policy and (continued….)

14. Finally, notwithstanding our retention of the general prohibition against POFS licensees offering their own common carrier services, we find it appropriate to grandfather those POFS licensees currently providing common carrier service for their connecting facilities, or CMRS providers that were formerly classified as private land mobile radio service providers. We agree with the commenter that it is inequitable to require SMR and other former private operators – whose microwave operations were constructed and licensed in full accordance with the Commission's rules prior to rule changes affecting their own non-microwave operations – either to construct and operate duplicate microwave facilities or seek service from a microwave or landline common carrier, often in areas where such service is not readily available.

2. Use of 10.7 - 11.7 GHz frequencies for final link

15. Background. Section 101.603(b)(3) of our Rules incorporates the prohibition, formerly found in Section 94.9(b)(3), against using POFS stations (except in the frequency bands 6,425-6,525 MHz and 18,142-18,580 MHz, or above 21,200 MHz) for the final radio frequency link in the chain of transmission of program material to CATV, MDS, or MATV (Master Antenna Television) systems.[54] The original purpose of the prohibition was to reserve space in the bands below 21.2 GHz to accommodate the anticipated migration to these bands of numerous operational-fixed microwave service licensees displaced from the 12.2-12.7 GHz band by the reallocation of this spectrum to the Direct Broadcast Satellite (DBS) service.[55] In the *Part 101 NPRM*, the Commission sought comment on CAI's request that we eliminate this restriction.[56] CAI posits that we have created an "unnecessary burden" on wireless cable operators by prohibiting them from "using the 11 GHz band to connect programming headends or satellite receive facilities with their main transmitters."[57] Commenters were asked to address whether granting CAI's request would adversely affect the Commission's efforts to ensure that spectrum is made available for the essential services offered by 2 GHz licensees that must relocate to accommodate emerging technologies.

16. Discussion. Commenters reject CAI's proposal because the 11 GHz band is one of the bands identified for 2 GHz relocations.[58] According to API, over the next several years, numerous POFS

(Continued from previous page)
Rules Concerning the International, Interexchange Marketplace, IB Docket No. 00-202, *Report and Order*, 16 FCC Rcd 10647 (2001) (noting that CMRS carriers that do not provide services solely through the resale of the international switched services of an unaffiliated U.S. facilities-based carrier must maintain price and service information for those routes on which they are affiliated with foreign carriers that possess market power and collect settlement payments from U.S. carriers).

[54]47 C.F.R. § 101.603(b)(3).

[55]Amendment of Part 94 of the Commission's Rules to Permit Private Video Distribution Systems of Video Entertainment Access to the 18 GHz Band, *Report and Order*, 6 FCC Rcd 1270, 1271 ¶ 11 (1991).

[56]*Part 101 MO&O and NPRM*, 15 FCC Rcd at 3155 ¶ 53.

[57]*Part 101 MO&O and NPRM*, 15 FCC Rcd at 3155 ¶ 52 (citing CAI Petition at 2-4).

[58]API Comments at 9-10; SBC Reply Comments at 5. The Emerging Technologies proceeding identified 11 GHz as a prospective home for relocated microwave licensees required to vacate the 2 GHz band to accommodate other new licensees. Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, *First Report and Order and Third Notice of Proposed Rule Making*, ET Docket No. 92-9, 7 FCC Rcd 6886 (1992).

licensees (perhaps thousands) will be required to vacate the 2 GHz band to make way for Mobile Satellite Service providers and other new licensees.[59] API expects that the 11 GHz band will be one of the principal bands to which displaced 2 GHz POFS licensees will seek to relocate their important and often safety-related microwave systems.[60] SBC states that once the final rules for the 2 GHz band have been decided, it will be important to have suitable frequencies available for all relocations from the 2 GHz band.[61] API adds that the demand for relocation spectrum in the 11 GHz band likely will be heightened in light of the fact that the Commission has reduced the amount of spectrum in the 18 GHz band that is available for terrestrial Fixed Services.[62] While API understands the Commission's desire to find spectrum for new and emerging technologies, it also implores the Commission not to lose sight of the importance of existing POFS systems -- particularly those that support the nation's critical infrastructure -- and, accordingly, to ensure that there will be adequate spectrum available for these systems.[63]

17. We conclude that, at this time, we should maintain the prohibition on using the 10.7-11.7 GHz band for the final radio frequency link in the chain of transmission of program material to CATV, MDS, or MATV systems. We reach that conclusion because allowing unrestricted video use in that band could impede the relocation of microwave systems in the 2 GHz band. Depending on the quality and modulation techniques, video channels typically use anywhere from 6 MHz to 50 MHz[64] for each channel. Private cable operators use 6 MHz channels in the frequency band from 18,142 MHz to 18,580 MHz for video delivery, and this contiguous band includes seventy-three channels for a total of 438 MHz. MVDDS has been allocated 500 MHz for, *inter alia*, delivery of video and data.[65] MMDS has access to thirteen channels of 6 MHz each,[66] and it has been noted that MMDS systems have not had sufficient channel capacity to compete with most cable systems.[67] In contrast, a 0.4 MHz bandwidth digital 1DS-1

[59]API Comments at 10 (citing Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrums at 2 GHz for Use by the Mobile-Satellite Service, *Second Report and Order and Second Memorandum Opinion and Order,* ET Docket No. 95-18, 15 FCC Rcd 12315 (2000)).

[60]API Comments at 10.

[61]SBC Reply Comments at 5.

[62]API Comments at 10 (citing Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use, *Report and Order,* IB Docket No. 98-172, 15 FCC Rcd 13430 (2000)).

[63]API Comments at 10.

[64]Telenetics/SMI Comments at 4.

[65]Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range; Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band By Direct Broadcast Satellite Licensees and Their Affiliates; and, Applications of Broadwave USA, PDC Broadband Corporation, and Satellite Receivers, Ltd. To Provide a Fixed Service in the 12.2-12.7 GHz Band, *First Report and Order and Further Notice of Proposed Rulemaking*, ET Docket No. 98-206, RM-9147, RM-9245, 16 FCC Rcd 4096, 4099 ¶ 2 (2000).

[66]A significant number of MMDS operators also have access to a total of 33 6 MHz channels via leasing arrangements with Instructional Television Fixed Service licensees. *See* 47 C.F.R. § 74.931.

[67]*See* Report to Congress Pursuant to the Rural Local Broadcast Signal Act, *Report*, 16 FCC Rcd 578, 591 ¶ 28 (2001). Since the 33-channel analog capacity of MMDS systems is generally not competitive with that of most (continued….)

channel can typically handle 1.54 megabits per second and carry twenty-four voice circuits, and a 10 MHz channel can handle 44.7 megabits per second and carry 672 voice circuits. These examples demonstrate that typical video use needs significantly more spectrum than typical voice or data use for each channel. When the Commission opens spectrum for video use, we anticipate that spectrum to require much more bandwidth than voice or data. Given the large number of microwave incumbents in the 2 GHz band that are still subject to relocation, we conclude that at this time, we should maintain the restriction as it now stands because of the possibility that video use could deplete whatever spectrum may be still available for relocation. Maintenance of the restriction will facilitate the relocation of those licensees currently utilizing the 2 GHz band that must, in the future, relocate to accommodate emerging technologies. We reserve the right to revisit this issue in the future once the relocation of 2 GHz incumbents progresses.

3. Technical Changes

a. Station authorization

18. Section 101.5(b) of our Rules requires a separate application for each DEMS Nodal Station, but not for a DEMS User Station.[68] Similarly, we require a separate authorization for each MAS master station, but not for an MAS remote station.[69] Because our Rules do not clearly state our application requirements for MAS, however, the Commission proposed to amend Section 101.5(b) to state that MAS remote stations also do not require a separate authorization.[70] We concur with APS that clarification of this Rule reduces the regulatory burden on licensees,[71] and will amend Section 101.5(b) of our Rules accordingly.

19. On our motion, we will take this opportunity to make a ministerial amendment to the MAS definition contained in Section 101.3 of our Rules to conform it with the current uses of the MAS

(Continued from previous page)
cable systems, MMDS subscribership has declined. *Id*. In recent years, MMDS spectrum has been acquired with the intent of providing a "last mile" connection to homes for the provision of high-speed Internet access. *Id*. It remains unclear whether these licensees will continue to provide analog video service, upgrade to digital video service, or discontinue multichannel video service. *Id*.

[68] 47 C.F.R. § 101.5(b). Nodal station is defined as the central or controlling station in a radio system operating on point-to-multipoint frequencies in the 2.5, 10.6, or 18 GHz bands. 47 C.F.R. § 101.3. DEMS User Station is defined as any one of the fixed microwave radio stations located at users' premises, lying within the coverage area of a Digital Electronic Message Nodal Station, and providing two-way digital communications with the Digital Electronic Message Nodal Station. *Id*.

[69] *See, e.g.,* Amendment of §§ 22.501(g)(2) and 94.65(a)(1) of the Rules and Regulations to Re-Channel the 900 MHz Multiple Address Frequencies, *Report and Order*, PR Docket No. 87-5, 3 FCC Rcd 1564, 1565 (1988). A remote station is defined as a fixed station in a multiple address radio system that transmits one-way to one or more central receive sites, controls a master station, or is controlled, activated or interrogated by, and may respond to, a master station. 47 C.F.R. § 101.3. A master station is defined as a station in a multiple address radio system that controls, activates or interrogates four or more remote stations. Master stations performing such functions may also receive transmissions from remote stations. *Id*.

[70] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3152 ¶ 41.

[71] APS Comments at 3.

service.[72] In addition, we will make ministerial amendments to Sections 101.1325 and 101.1333 of our Rules. First, we insert the word "and" between the words "Incumbent" and "site-based" in Section 101.1325(a). The word "and" was inadvertently omitted in previous publications of this rule section. Next, we will make a ministerial amendment to Section 101.1333(c) to correct the rule citation from Section 101.1329(b) to Section 101.1331(c). We find that notice and public comment are unnecessary because these revisions are non-substantive in nature and in the public interest, as they will foster consistency among our Part 101 service rules.[73]

b. Temporary and conditional authorization

20. Background. In the *NPRM*, the Commission proposed various amendments and clarifications to Section 101.31 of our Rules, which governs temporary and conditional fixed microwave operations. It proposed to eliminate the requirement in Section 101.31(a)(3)-(5)[74] that licensees provide certain technical information regarding their temporary operations.[75] It also proposed to insert language in paragraph (a)(2) of this section to specify that an application for authority to operate a fixed station at temporary locations must specify the precise geographic area within which the operation will be confined, because this language was formerly in Section 101.13 of the Rules and should have been moved to another section when Section 101.13 was removed.[76]

21. Regarding conditional authorization, the Commission proposed to amend Section 101.31(b)(1)(vii) to clarify that only the four frequency pairs listed in Section 101.147(s) are allocated for conditional operation, rather than the entire 21.2–23.6 GHz band.[77] Applications to use the remaining frequencies in the band would follow normal processing and await the Commission obtaining clearance from the National Telecommunications and Information Administration ("NTIA") before operations.[78] Finally, the Commission proposed to make frequency bands 952.95-956.15 MHz and 956.55-959.75 MHz, which are designated for point-to-point use in Tables 9 through 11 of Section 101.147(b)(6),[79]

[72] *See* 47 C.F.R. § 101.3. *See also* Amendment of the Commission's Rules Regarding Multiple Address Systems, *Report and Order*, WT Docket No. 97-81, 15 FCC Rcd 11956, 11999 ¶¶ 101-105 (2000) (*MAS Report and Order*). Previously, the multiple address system definition required a minimum of four unique remote stations. The MAS proceeding eliminated the minimum four remote requirement. *Id*. Current permissible MAS uses include point-to-point and point-to-multipoint operations.

[73] *See* 5 U.S.C. § 553(b)(A), (B).

[74] *See* 47 C.F.R. § 101.31(a)(3)-(5).

[75] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3152 ¶ 42.

[76] *Id.*

[77] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3152 ¶ 43 (citing Amendment of Part 94 of the Commission's Rules and Regulations to Facilitate Operation of Low Power, Limited Coverage Systems in the 22.0-23.6 GHz, *First Report and Order*, PR Docket No. 79-337, 81 FCC 2d 140 (1980); Amendment of Part 94 of the Commission's Rules and Regulations to Facilitate Operation of Low Power, Limited Coverage Systems in the 22.0-23.6 GHz, *Memorandum Opinion and Order*, Gen. Docket No. 79-337, 87 FCC 2d 1090 (1981); Amendment of Part 94 of the Commission's Rules and Regulations to Facilitate Operation of Low Power, Limited Coverage Systems in the 22.0-23.6 GHz, *Second Report and Order*, Gen. Docket No. 79-337, 94 FCC 2d 32 (1983)).

[78] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3152 ¶ 43.

[79] 47 C.F.R. § 101.147(b)(6).

available for conditional authorization under Section 101.31(b).[80] It did not propose any other frequencies listed in these tables because the other Part 101 bands either are already available for conditional authority, have been auctioned or proposed for auction, are currently unavailable for licensing, or require Interdepartment Radio Advisory Committee (IRAC) coordination with NTIA.[81]

22. Discussion. Commenters were split on the proposal to eliminate the requirements for licensees to provide certain technical information to the Commission regarding their temporary operations. Some commenters support the Commission's proposal because they assert that the technical information submission requirements of Section 101.31(a)(3)-(5) no longer serve any regulatory purpose.[82] However, APS argues that we should retain the requirements because 1) a temporarily or conditionally licensed transmitter is just as capable of causing interference as a permanently licensed transmitter, and 2) the prior coordination requirements protects licensees by giving them an opportunity to ascertain the potential for interference with their licensed systems by using the technical data contained in the prior coordination notice.[83] We disagree. We note that this information does not appear in ULS, and we rarely if ever receive requests from licensees to review it. Licensees experiencing interference can and do seek information from their frequency coordinators, who should already have this information. Consequently, we believe these requirements no longer serve any regulatory purpose. We therefore eliminate Section 101.31(a)(3)-(5).

23. Commenters were also divided on elimination of the agreement to provide specific information on the location of temporary fixed stations. One commenter supports the proposal to amend Section 101.31 to specify that an application for authority to operate a fixed station at temporary locations must specify the precise geographic area within which the operation will be confined,[84] while APS argues that the proposed rule does not require enough information.[85] APS contends that knowing the geographic area is not enough and that precise coordinates, which temporary licensees can determine with an inexpensive Global Positioning System receiver, are needed so that other licensees will have a reasonable chance of predicting and tracking down interference. Again, we are not persuaded by the concerns of APS. A temporary fixed authorization is intended to permit operation at multiple temporary locations in a service area without requiring new coordination every time the facility is moved.[86] The requirement that the Commission proposed to add to Section 101.31 formerly was in our rules but erroneously was removed in the *ULS Proceeding*.[87] The record does not indicate that the old rule was insufficient to permit licensees to predict and track interference. Therefore, we will adopt the proposal, with slight modifications to conform to the capabilities of ULS. Specifically, we will require temporary fixed

[80]47 C.F.R. § 101.31(b) (formerly 47 C.F.R. § 101.31(e)).

[81]*Part 101 MO&O and NPRM*, 15 FCC Rcd at 3153 ¶ 44.

[82]SCE&G Reply Comments at 3-4; Commonwealth Edison Company (Commonwealth Edison) Reply Comments at 2.

[83]*See* APS Comments at 3.

[84]SCE&G Reply Comments at 4.

[85]APS Comments at 4-5.

[86]*See* 47 C.F.R. § 101.31(a).

[87]*See Part 101 MO&O and NPRM,* 15 FCC Rcd at 3152 ¶ 42.

applicants to specify its service area as a radius of operation about a specific coordinate (latitude/longitude), or as a county, or as a State.[88]

24. Regarding the Commission's proposal to clarify that the only frequencies in the 21.2-23.6 GHz band on which conditional authorization is available are the four pairs listed in Section 101.147(s), several commenters state that this interpretation is incorrect. They argue that it is inconsistent with the specific text of Section 101.31(b), and that limiting the use of conditional licensing to four frequency pairs intended for low-power channel use unnecessarily restricts access by fixed point-to-point terrestrial microwave radio services users.[89] We disagree. Section 101.31(b) is most appropriately read to allow conditional operation only in accordance within the power limit pursuant to the cross-referenced section. Because the cross-referenced section -- Section 101.147(s) -- is limited to four frequency pairs, only those applications that specify one of the four frequency pairs listed in Section 101.147(s)[90] can operate within the power limitations "pursuant" to Section 101.147(s) and, thus, can qualify for conditional operation under Section 101.31(b). We also note that the Commission does not currently have an agreement with NTIA to permit conditional authorization on any other frequencies in this band. We conclude that commenters' confusion demonstrates the need to amend and clarify Section 101.31(b) as proposed. Amendment of Section 101.31(b) would make plain the requirement, set forth in Sections 101.31(b) and 101.147(s), that *only* the frequency pairs identified in Section 101.147(s) are authorized for conditional operation if the maximum effective isotropic radiated power (EIRP)[91] utilized does not exceed 55 dBm.

25. Finally, commenters support the Commission's proposal to make the point-to-point channels in the 952.95-956.15 MHz and 956.55-959.75 MHz available for conditional authorization under Section 101.31(b) because 1) utilities, pipeline companies and other critical infrastructure industries make significant use of these frequency bands for lower density communications; and 2) it would be extremely helpful if applicants for point-to-point channels in these bands were able to deploy and operate under conditional authority, just as they may in higher microwave bands.[92] Accordingly, we will adopt the proposal.[93]

c. Transmitter frequency tolerance and power limitations

26. Background. The Commission proposed to clarify and correct the frequency tolerance table in Section 101.107(a) by 1) consolidating the separate columns for all fixed and base stations, mobile stations over three watts, and mobile stations three watts or less, because the frequency tolerances for these three categories are the same; 2) deleting footnote 2 because it applies to equipment which is over forty years old; 3) deleting footnote 5 because the same information is contained in footnote 7; and 4)

[88]We will not apply this requirement to applications filed before the effective date of this rule.

[89]*See* National Spectrum Managers Association (NSMA) Comments at 16; Fixed Wireless Comments at 18; Alcatel USA, Inc. (Alcatel) Comments at 24.

[90]The frequency pairs are 21.825/23.025 GHz, 21.875/23.075 GHz, 21.925/23.125 GHz, and 21.975/23.175 GHz.

[91]We are also modifying the power reference to reference EIRP instead of effective radiated power (ERP). *See infra* ¶ 71.

[92]UTC Comments at 10. *See also* API Comments at 6.

[93]We also take this opportunity to delete from Section 101.31(b) references to the "Certification Form," FCC Form 415T, because the form no longer exists.

correcting certain errors in the listing of bands and tolerances.[94] The Commission also proposed to amend the EIRP table in Section 101.113(a)[95] to divide the 10.55-10.68 GHz band into two separate bands: 10.55-10.6 GHz with a maximum power of 55 dBW and 10.6-10.68 GHz with a maximum power of 40 dBW, to be consistent with US footnote 265 of the Table of Frequency Allocations in Section 2.106,[96] which limits fixed microwave stations in the 10.6-10.68 GHz band to an EIRP of 40 dBW.[97] The Commission sought this change to be consistent with NTIA and the *Second Report and Order* in Gen. Docket No. 80-739.[98] The Commission sought comment on the accuracy of these proposed changes, their compliance with the Act, and their effect on licensees.[99]

27. Discussion. We did not receive any comments regarding the revisions to Section 101.107(a). Thus, we adopt the proposal to revise the frequency tolerance table as detailed above.

28. Regarding Section 101.113(a), some commenters assert that this modification would make the band difficult to use for long paths relocated from the 2 GHz band.[100] Specifically, they maintain that because most systems in this segment of the 10 GHz band are bi-directional, the proposed change effectively would reduce the EIRP limit for the entire 10.55-10.68 GHz band to 40 dBW, which would restrict the maximum antenna size. They argue that limiting the EIRP can be obtained by either changing the maximum EIRP for the 10 GHz band in Section 101.113(a) from 55 dBW to 45 dBW, or maintaining the current 55 dBW EIRP limit and requiring systems to reduce their power to the 40 dBW level using Automatic Transmit Power Control (ATPC).[101]

29. We disagree with these commenters. First, permitting a maximum EIRP above 40 dBw in the 10.6-10.68 GHz portion of the band would be inconsistent with US footnote 265 and our agreement with

[94] *Part 101 MO&O and NPRM,* 15 FCC Rcd at 3153 ¶ 45.

[95] 47 C.F.R. § 101.113(a).

[96] *See* Amendment of Part 2 of the Commission's Rules Regarding Implementation of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, *Second Report and Order*, Gen. Docket No. 80-739, FCC 83-511 (rel. Dec. 8, 1983).

[97] 47 C.F.R. § 2.106.

[98] *See* Amendment of Part 2 of the Commission's Rules Regarding Implementation of the Final Acts of the World Administrative Radio Conference, Geneva, 1979, *Second Report and Order*, Gen. Docket No. 80-739, FCC 83-511 (rel. Dec. 8, 1983).

[99] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3153 ¶ 45.

[100] NSMA Comments at 21-22; Alcatel Comments at 32; Fixed Wireless Comments at 27.

[101] NSMA Comments at 22; Alcatel Comments at 33; Fixed Wireless Comments at 27-28. Under this proposal, transmitters only would exceed the 40 dBW level during short periods of multipath or rain fading. ATPC is a feature of a digital microwave radio system that adjusts the transmitter output power. ATPC allows the transmitter to operate at less than maximum power for most of the time. In a radio employing ATPC, the transmit power is reduced during normal operation conditions. When the receiver detects a reduction in signal level, a control signal is sent to the far end transmitter, instructing it to increase the power output to compensate for the signal reduction. The power output is limited to the licensed (maximum) transmit power. Guidelines for use of ATPC are set forth in the TIA Telecommunications Systems Bulletin TSB 10. "Interference Criteria for Microwave Systems (TSB 10). 47 C.F.R. § 101.3.

NTIA. Moreover, the comments did not provide sufficient justification for changing the power limit for the 10.55 to 10.6 GHz segment of the band. We see no reason to reduce the EIRP on the 10.55-10.60 GHz side of the band because US footnote 265 does not refer to this side of the band. In addition, licensees will have more flexibility if we leave the maximum power unchanged for the 10.55 to 10.6 GHz portion and allow system designs to use whatever power is necessary within that limit (with or without ATPC) instead of lowering the power solely to match the other portion that has the smaller power limit. We therefore revise the EIRP for the 10.6-10.68 GHz portion of the band at 40 dBW in Section 101.113 to be consistent with US footnote 265 of the Table of Frequency Allocations in Section 2.106. This revision ensures that our Part 101 service rules conform with the *Second Report and Order* in General Docket No. 80-739, which amended the Table of Frequency Allocations to comply with our agreement with NTIA. We note that a review of our licensing database shows that eleven stations in this band[102] have an authorized EIRP over 40 dBW, with no station exceeding 44.5 dBW. We will grandfather these eleven stations, provided that neither end point of the relevant link is relocated.[103]

d. Directional antennas below 932.5 MHz

30. Section 101.115(b) sets forth the technical requirements for stations operating below 932.5 MHz that are required to use directional antennas.[104] However, the only Part 101 frequencies below 932.5 MHz are MAS frequencies,[105] and these stations are not required to use directional antennas.[106] Because it appears that Section 101.115(b) no longer applies to identifiable frequencies, the Commission concluded that this provision no longer serves a regulatory purpose and proposed to delete it on that basis.[107] We did not receive any response to this request for comment. As Section 101.115(b) no longer serves any regulatory purpose because it no longer applies to identifiable frequencies, we delete it from the Commission's Rules.

e. Antenna polarization

31. Background. The last sentence of Section 101.117 states, "Unless otherwise allowed, only linear polarization (horizontal or vertical) shall be used."[108] The Commission proposed to limit this restriction to only LMDS operators within twenty kilometers of their service area boundary.[109] It also

[102]The eleven stations are listed in Appendix F. Our records reveal that there are 3354 active stations in the 10.55-10.68 GHz band.

[103]Any applications pending when the rule takes effect that seek authorization to operate in the 10.6-10.68 GHz band with an EIRP over 40 dBW will be granted, but with an authorized EIRP of 40 dBW.

[104]47 C.F.R. § 101.115(b). The substance of 47 C.F.R. § 101.115(b) was carried over from Part 21. *See* 47 C.F.R. § 21.108(b) (1995).

[105]47 C.F.R. § 101.101.

[106]47 C.F.R. § 101.115(c) n.2.

[107]*Part 101 MO&O and NPRM*, 15 FCC Rcd at 3153-54 ¶ 46.

[108]47 C.F.R. § 101.117.

[109]*Part 101 MO&O and NPRM*, 15 FCC Rcd at 3154 ¶ 47 (citing Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, *Second Report and Order*, *Order on Reconsideration*, *and Fifth Notice of Proposed Rulemaking*, CC (continued….)

proposed to delete the words "horizontal or vertical" from the rule, because strict horizontal or vertical polarization is improbable for most of the billboard passive reflectors that we authorize.[110] Due to reflections in the non-vertical/horizontal planes of incidence, the Commission proposed to clarify the rules to allow systems with rotated linear polarization.[111]

32. Discussion. Motorola argues that we should eliminate polarity restrictions for all LMDS stations, including stations within twenty kilometers of a service area boundary.[112] It contends that the restriction does not provide any additional assurances of interference protection because current LMDS deployments of point-to-multipoint stations use both vertical and horizontal polarization simultaneously to enable frequency re-use within a service area. Therefore, distant receivers -- such as across a service area boundary -- will receive interference from both polarities. The polarity of the dominant interference source will depend on the specific location and antenna orientation of the station receiving interference.[113] To operate in adjacent areas, Motorola states, operators will need to exchange information and work out equitable interference mitigation plans.[114] Additionally, Motorola notes that licensees in no other geographically licensed service, such as Personal Communications Services, cellular, or Wireless Communications Services, have similar limitations on polarization.[115] Motorola also states that the current restrictions that permit only vertical or horizontal polarization prohibit use of slant linear or circular polarity.[116] According to Motorola, slant or linear and circular polarity have path loss advantages in situations involving heavy rainfall. Motorola suggests that restricting LMDS polarity inhibits technology advancements or future deployments.[117]

33. Other commenters argue that the restriction should be retained, and oppose our proposal to delete the words "horizontal or vertical" because 1) cross-polarization of signals is a key method used by frequency coordinators to allow a greater density of microwave frequency assignments in a given area, and allowing the use of circular or elliptical polarization in the site-licensed bands that are shared among many users would destroy the cross-polarization advantage and must not be allowed;[118] and 2) authorization of other polarization types in these bands, such as circular or elliptical, unnecessarily would increase the potential for interference.[119] These commenters, however, support an exception to

(Continued from previous page)
Docket No. 92-297, 12 FCC Rcd 12545, 12666 (1997).

[110] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3154 ¶ 47.

[111] *Id*.

[112] Motorola, Inc. (Motorola) Comments at 2-3.

[113] *Id*. at 3.

[114] *Id*.

[115] *Id.* at 3.

[116] *Id*. at 4.

[117] *Id*. at 4.

[118] Comsearch Comments at 3.

[119] NSMA Reply Comments at 12 (citing API Comments at 8 (permitting rotated linear polarization on a widespread basis will create unnecessary coordination difficulties and threaten harmful interference to other licensed operations)); *see also* Alcatel Reply Comments at 17.

accommodate billboard passive reflectors, as a strict vertical or horizontal polarization requirement cannot be imposed upon systems that employ billboard passive reflectors, because the reflection of the signal naturally results in a polarization rotation.[120] They state that, while allowing transmitters to use rotated linear polarizations would only serve to increase the likelihood of interference, as the number of links utilizing passive reflectors is small relative to the total number of links, and the signal reflected off a passive reflector is generally rotated from horizontal or vertical, allowing passive reflectors to emit rotated linear polarizations is reasonable.[121]

34. Upon consideration of the record, we will retain the rule as is, except to remove the restriction with respect to LMDS stations more than twenty kilometers from a service area boundary. We make the exception for LMDS, in light of the arguments which have already been explored in the LMDS proceeding.[122] Elsewhere, we do not believe that it is in the public interest to remove the advantage that cross-polarization provides, and unnecessarily increase the risk of interference. Therefore, we believe that we should maintain our current requirement that microwave systems use vertical or horizontal polarization, but allow limited exceptions for billboard systems utilizing passive reflectors, the number of which should remain small relative to the total number of point-to-point links. The record also establishes that some commenters do not want to encourage billboard reflector systems. Therefore, we find that allowing passive reflectors to emit slightly rotated linear polarizations is reasonable on a case-by-case basis by waiver, but that we should not permit the transmitters themselves to be able to use anything other than strict horizontal or vertical linear polarization. We accordingly will retain the words "vertical and horizontal" in the existing rule in Section 101.117 and continue to authorize billboards reflector systems using slightly rotated linear polarization by waiver. Moreover, we do not agree with Motorola that restricting LMDS polarity to horizontal and vertical within twenty kilometers of the area boundaries inhibits technology advancements or future deployments. Licensees are free to explore other polarizations within the major portion of their areas.

f. Frequencies

35. The Commission proposed minor clarifications to and streamlining of Section 101.147, which sets out the frequencies available for fixed microwave services.[123] It proposed to amend the introductory paragraph of Section 101.147(b) to clarify that it covers both MAS and point-to-point operations, and to clarify which subsections and tables pertain to each category. It also proposed to update the references throughout Section 101.147(b) from "Public Land Mobile Service" to "Public Mobile Services."[124] These

[120]Comsearch Comments at 4; API Comments at 8.

[121]APS Comments at 5.

[122]*See* Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, *Second Report and Order*, *Order on Reconsideration*, *and Fifth Notice of Proposed Rulemaking*, CC Docket No. 92-297, 12 FCC Rcd 12545, 12665-66 ¶¶ 282-84 (1997).

[123]*Id*. at 3154 ¶ 49.

[124]*See* Revision and Update of Part 22 of the Public Mobile Radio Service Rules, *Report and Order*, CC Docket No. 80-57, 95 FCC 2d 769 (1983).

changes were incorporated by the Commission in the Multiple Access Systems proceeding.[125] In addition, the Commission proposed to delete a grandfathering provision from Sections 101.147(k) and 101.803(e)[126] regarding the 6525-6575 MHz frequency band which expired in 1968. We did not receive any comments. Thus, as we did not receive any objections, we adopt the proposal and change the above-referenced rules.

g. Frequency tolerance

36. The Commission proposed to amend Section 101.507[127] to provide the frequency tolerance of ±0.0001% for DEMS Nodal Stations and ±0.0003% for DEMS User Stations in the 10,550-10,680 MHz band.[128] It appears that this was inadvertently omitted in prior rule changes. We did not receive any comments. As no one has registered any objection, we adopt the proposal and change Section 101.507 of the rules accordingly.

h. Stations at temporary fixed locations

37. Section 101.815(a)(1) permits temporary operation of LTTS stations for six months, but prohibits temporary operation of stations for services that are initially known to be of longer than six months' duration.[129] The rule allows for short-term needs or for testing purposes, but prevents applicants from using the temporary provisions to avoid having to wait for regular processing of their application for permanent authority. The Commission proposed to eliminate the prohibition of temporary operation of stations for services known to be of longer than six months' duration, and thus allow applicants to use the temporary fixed locations without restrictions, provided they still file for permanent authority in accordance with Section 101.815(a)(2)[130] for stations that remain longer than six months.[131] Moreover, the Commission stated its belief that processing time is sufficiently expeditious that applicants will not seek any benefit from using a temporary location to avoid regular processing delays, and that broadening the scope of use of temporary fixed locations could reduce the number of requests for special temporary authority which might otherwise be filed.[132] We did not receive any response to this request for comment. As no objections were registered, we adopt the proposal and change Section 101.815(a)(1).

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[125] *See MAS Report and Order*, 15 FCC Rcd 11956; Amendment of the Commission's Rules Regarding Multiple Address Systems, *Erratum*, WT Docket No. 97-81, 15 FCC Rcd 16415 (2000).

[126] 47 C.F.R. §§ 101.147(k), 101.803(e).

[127] 47 C.F.R. § 101.507.

[128] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3155 ¶ 50.

[129] 47 C.F.R. § 101.815(a)(1).

[130] 47 C.F.R. § 101.815(a)(2). We note that Section 101.815(a)(2) states that applications for permanent authorization for stations at temporary locations must be filed at least 30 days prior to the end of the six-month period. We nonetheless encourage applicants to submit their applications for permanent authorization as early as possible in the six-month period, to ensure timely processing.

[131] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3155 ¶ 51.

[132] *Id*.

i. LMDS technical rules

38. Background. With the advent of commencement of LMDS operations, the Commission was concerned that some Part 101 technical rules may not be fully consistent with the equipment being manufactured to provide the types of services permitted and envisioned by our LMDS rules, so it sought comment on whether the Part 101 emission mask requirement in certain circumstances may be too severe for LMDS. Section 101.111(a)(2)(ii)-(iii) sets forth the required attenuation:

> (ii) For operating frequencies above 15 GHz, in any 1 MHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth: As specified by the following equation but in no event less than 11 decibels:
>
> $A = 11 + 0.4(P - 50) + 10 \text{ Log}_{10} B$. (Attenuation greater than 56 decibels is not required.)
>
> (iii) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \text{ Log}_{10}$ (mean output power in watts) decibels, or 80 decibels, whichever is the lesser attenuation.[133]

39. Given its understanding that LMDS transmitters may be manufactured for a spectrum block up to 850 MHz wide, or for discrete channels such as 10 MHz, and that LMDS transmitters are filtered as wide as the spectrum block, the Commission sought comment as to whether attempting to mask each discrete frequency in accordance with Part 101 presents insurmountable logistical problems for LMDS licensees.[134] It also noted that the Commission's technical standards allow the use of a bandwidth up to 850 MHz in the 27.50-28.35 GHz band,[135] but if a manufacturer designs a transmitter to operate with a bandwidth of 10 MHz, and the value for the maximum bandwidth (850 MHz) from the table in Section 101.109 of the Commission's Rules is used in the emission mask equation above, this interpretation may create an unreasonable or difficult to achieve emission mask.[136] It sought comment on whether the table in Section 101.109 or the approach in Section 101.111 of the Commission's Rules should be changed to indicate that LMDS equipment manufacturers can specify and use the actual bandwidth of the designed transmitter.[137] The Commission also sought comment on adopting a minimum limit for out-of-band emissions of -13 dBm because the method of calculating an emission mask in Section 101.111 as a function of power works well for high-powered transmitters but can result in out-of-band emissions that may be unnecessarily low for low powered transmitters.[138]

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[133] 47 C.F.R. § 101.111(a)(2)(ii)-(iii). P = percent removed from the carrier frequency, and B = authorized bandwidth in MHz.

[134] *See Part 101 MO&O and NPRM*, 15 FCC Rcd at 3157 ¶ 54.

[135] *See* 47 C.F.R. § 101.109(c).

[136] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3157 ¶ 55.

[137] *Id.*

[138] *Id.* at 3157 ¶ 56 (citing Letter from David E. Hilliard and Thomas S. Dombrowsky, Jr., Wiley, Rein & Fielding, (continued….)

40. In addition, the Commission sought comment on whether other technical rules applicable to LMDS should be changed. Finally, it noted that Section 101.139 indicates that LMDS, 24 GHz, and 39 GHz transmitters must be of a type that has been certificated by the Commission,[139] and proposed[140] to subject them instead to the less burdensome verification procedure applicable to most other fixed point-to-point microwave transmitters.[141]

41. Discussion. Commenters agree that the Part 101 emission mask requirement in certain circumstances is too severe to provide LMDS operators maximum flexibility, and they offer several solutions.[142] Winstar would have the Commission 1) clarify that the Section 101.3 definition of "assigned frequency" includes the center frequency of an individual transmitter/modulator, for block-assigned bands, such as the LMDS band; and 2) clarify that the definition of "authorized bandwidth" includes the nominal radio frequency bandwidth of an individual transmitter/modulator in block-assigned bands.[143] Winstar states that clarifications of these definitions would ensure that the current emission mask requirement will be reasonable for LMDS and other block-assigned services in the future. Alternatively, Winstar supports a modification to Section 101.109 and/or Section 101.111 to indicate the LMDS equipment manufacturers and operators can specify and use the actual bandwidth of the designed transmitter.[144]

42. Alcatel proposes that Section 101.111(a)(2) should be interpreted to exclude frequencies inside the authorized bandwidth when measuring out-of-band emissions. According to Alcatel, this solution would 1) meet LMDS radio equipment manufacturer requirements, 2) not necessitate a rule change, and 3) provide adequate safeguards against harmful interference.[145]

43. Regarding the attenuation requirement in Section 101.111, Motorola suggests that we modify the reference bandwidth in Section 101.111(a)(2)(iii) from 4 kHz to 1 MHz to be consistent with Section 101.111(a)(2)(ii) and Appendix S3 of the International Radio Regulations, which stipulates that fixed service systems deployed after 2003 will use a resolution bandwidth of 1 MHz for measurement of spurious emissions.[146] Motorola states that by applying a consistent standard, the Commission will enable

(Continued from previous page)
counsel for Bosch, to Thomas J. Sugrue, Chief, Wireless Telecommunications Bureau, at 3-5 (Jan. 27, 1999)).

[139] *See* 47 C.F.R. § 101.139(a).

[140] *See Part 101 MO&O and NPRM*, 15 FCC Rcd at 3157-58 ¶ 57.

[141] *Compare* 47 C.F.R. § 2.952 *with* 47 C.F.R. § 2.1053.

[142] *See, e.g.,* Motorola Comments at 4-6; Winstar Communications Inc. (Winstar) Comments at 6-7; Alcatel Comments at 26-29.

[143] Winstar Comments at 6-7.

[144] *Id*. at 7.

[145] Alcatel Comments at 26-27; *see also* NSMA Comments at 18; Fixed Wireless Comments at 20; NSMA Reply Comments at 18; Alcatel Reply Comments at 23.

[146] Motorola Comments at 5.

the manufacture of equipment that can be easily deployed domestically and internationally, with a minimum of modification.[147]

44. Motorola also urges the Commission to reaffirm its practice of utilizing the maximum bandwidth for LMDS as listed in Section 101.109(c) of the Commission's Rules. It argues that if the Commission adopts the suggestions by other commenters to use a bandwidth narrower than the maximum bandwidth limitations found in Section 101.109(c), the Commission should provide clear and descriptive definitions for terms such as single-carrier, multi-carrier, assigned bandwidth of the station, block band edge, affect on aggregation and disaggregation of channels/blocks, occupied bandwidth, and emission designator bandwidth for the requirement to be clearly understood and implemented.[148] Motorola asserts that, at a minimum, it is critical for the Commission to clarify the specific requirements for out-of-band emissions, as it is apparent from the commenters there is a disparity in how these rules are being interpreted.[149]

45. However, Motorola agrees with these commenters that out-of-band emission limitations apply outside and not inside the assigned band of the station no matter how the out-of-band bandwidth is calculated. Such a result is exactly what occurs when using the maximum authorized bandwidth for the out-of-band bandwidth and is consistent with the Commission's past interpretations and implementation of the emission mask rules for LMDS. Therefore, Motorola encourages the Commission to clarify that out-of-band emission limits continue to apply only outside the assigned band of operation.[150]

46. Motorola agrees with the observation in the *NPRM* that application of the current emission mask overly restricts low-powered stations and with the proposal to provide for a lower limit of -13 dBm (-43 dBw or 50 microwatts) below which attenuation is not required.[151] It states that this would be in accordance with the international limits established for other similar services.[152] Adopting -13 dBm as a goal for attenuation enables lower output power transmitters to comply with the current emission mask without extensive filtering. Any attenuation below -13 dBm fails to provide further interference protection to adjacent systems because this value is recognized as the permissible spurious emission level. Requiring additional filtering for low power systems does not make possible additional use of the spectrum, nor does it supply additional interference protection to neighboring operations. Therefore, we amend Section 101.111(a)(2)(ii) such that the parenthetic sentence reads as follows:

> (Attenuation greater than 56 decibels or to an absolute power of less than -13 dBm is not required.)

47. Based upon our evaluation of the record, we believe that we should modify the Part 101 emission mask requirements to make it less severe for LMDS. Specifically, we will adopt the same mask

[147] *See id*. at 4.

[148] *See* Motorola Reply Comments at 2 (citing NSMA Comments at 18; Fixed Wireless Comments at 20-21; Alcatel Comments at 26-29; Winstar Comments at 6-7).

[149] *See* Motorola Reply Comments at 2-3.

[150] *See id*. at 3.

[151] Motorola Comments at 5.

[152] *See id*. at 5 (citing 47 C.F.R. §§ 24.238, 27.53, 90.669, 90.691).

requirements for LMDS that we did for the 24 GHz service, as outlined in Section 101.111(a)(2)(iv).[153] These requirements are based on a maximum bandwidth of 40 MHz. At the same power output, use of a larger bandwidth results in less power being radiated on any particular reference frequency, because the same amount of energy is spread over a wider bandwidth. Using the value of 850 for B (based on the maximum bandwidth of 850 MHz) in the emission limitations formula for all cases can result in a power reduction requirement that may be impossible or extremely difficult to meet, and can in some instance be below the permissible spurious emission level. Therefore, assuming a maximum bandwidth of 40 MHz, rather than 850 MHz, results in a more reasonable emission mask requirement. This means that the reduction outside of the band edges should closely follow that which is specified for 24 GHz transmitters and be sufficient to protect adjacent band operations.

48. We also agree with Motorola's suggestion to modify the reference bandwidth in Section 101.111(a)(2)(iii) from 4 kHz to 1 MHz to be consistent with Section 101.111(a)(2)(ii) and Appendix S3 of the International Radio Regulations.[154] We note that the change in reference bandwidth results in a more restrictive emission mask requirement. Therefore, we will implement this new requirement by prohibiting the manufacture or import of equipment not meeting the new standard twenty-four months after these rules become effective.

49. In addition, we clarify some of the terms used to ensure that the current emission mask requirement are reasonable for LMDS and other block-assigned services in the future through the following actions:

1) We define "assigned frequency" when determining the emission mask in Section 101.111 to include the center frequency of an individual transmitter/modulator, for block-assigned bands, such as the LMDS band;

2) We define "authorized bandwidth" when determining the emission mask in Section 101.111 to include the nominal radio frequency bandwidth of an individual transmitter/modulator in block-assigned bands;

3) We clarify that out-of-band emission limits apply only outside the assigned band of operation and not within the band;

4) We change the maximum reduction to specify a value of 56 dB or to an absolute power of not less than -13 dBm or –43 dBw; and

5) We change the value of B (bandwidth) used in the formulas to allow for actual bandwidth of the transmitter designed instead of the maximum specified in Section 101.109.

50. Finally, all the commenters addressing the issue supported the Commission's proposal to replace the certification requirement for LMDS, 24 GHz, and 39 GHz (multipoint) equipment with a verification procedure.[155] They argue that LMDS, 24 GHz, and 39 GHz transmitters meet the three

[153] 47 C.F.R. § 101.111(a)(2)(iv).

[154] Motorola Comments at 5.

[155] *See* Triton Network Systems (TNS) Comments at 2-3; Giganet Wireless Systems, Inc. (Giganet) Comments at 5; Winstar Comments at 7; NSMA Comments at 19; Fixed Wireless Comments at 21; Alcatel Comments at 29; NSMA Rely Comments at 17; Alcatel Reply Comments at 22; Teligent, Inc. (Teligent) Reply Comments at 2-3.

factors the Commission identified in the ET Docket No. 97-34 proceeding, in which it initially specified the verification self-approval procedure for most Part 101 microwave devices, as important in determining to move the Part 101 devices to a self-approval procedure: 1) the device is used in a licensed radio service where the license can be easily located to resolve interference problems, 2) the manufacturers are capable of performing the necessary measurements to ensure compliance, and 3) an excellent record exists of compliance for the devices.[156] They also state that faster deployment of new technology will result from verification procedures, as compared to certification procedures, which will yield significant public interest benefits with little risk.[157] We agree that permitting the application of the less burdensome verification process, rather than the current certification process, to LMDS, 24 GHz, and 39 GHz transmitters, is more efficient. Accordingly, we adopt the proposal and change Section 101.139 of the Rules.

j. Deletion of DEMS 18-19 GHz Frequencies

51. DEMS licensees were required to cease operating on frequencies in the bands 18.820-18.920 GHz and 19.160-19.260 GHz (Channels 25-34) as of January 2, 2001.[158] As an administrative matter, we will revise our rules to reflect that such operations are no longer permitted by deleting the DEMS reference to these specific frequency bands from the relevant technical rules.[159]

B. TIA Petition for Rulemaking

52. The *NPRM* also sought comment on a Petition for Rulemaking filed by TIA relating to the 10 GHz and 23 GHz bands.[160] The TIA Petition proposes that we authorize conditional licensing in the 23 GHz band.[161] In addition, the Petition recommends the adoption of more complete technical standards to govern optimal channelization of the band,[162] frequency tolerance,[163] spectrum efficiency,[164] and the operation of low-power stations.[165] The Petition also seeks to modify the Commission's antenna standards for the 10 GHz and 23 GHz bands to permit the use of smaller antennas than otherwise

[156] *See* TNS Comments at 2-3.

[157] *See* Teligent Reply Comments at 2-3.

[158] 47 C.F.R. § 101.147(r)(9). DEMS operations are still permitted in the 10.55-10.68 GHz band.

[159] *See*, *e.g.,* 47 C.F.R. §§ 101.107, 101.109, 101.113.

[160] TIA also proposed rule changes to Part 74, Television Broadcast Auxiliary Service, to permit transport of digital transmissions over point-to-point microwave frequencies in that service, but these proposals are beyond the scope of this proceeding and will be handled in a separate proceeding. *See* Part 74 Rewrite, 16 FCC Rcd 10556.

[161] *See* TIA Petition at 2-3.

[162] *See id.* at 16-18.

[163] *See id.* at 18-19.

[164] *See id.* at 19-20.

[165] *See id.* at 20-22.

currently allowed in those bands.[166] TIA argues that its proposed revisions would make the bands more attractive to fixed microwave users, which in turn will help alleviate overcrowding in other bands.[167]

1. Conditional authorization

53. Background. Currently, we permit applicants for all licenses awarded by competitive bidding to begin construction of facilities prior to the grant of their applications.[168] Furthermore, for all services subject to competitive bidding we permit pre-grant construction by applicants that are subject to petitions to deny.[169] Such pre-grant construction is subject to any service-related restrictions, including, but not limited to, antenna restrictions, environmental requirements, and international coordination.[170] Any applicant that engages in pre-grant construction activity does so entirely at its own risk, and the Commission does not take such activity into account in ruling on any petition to deny.[171] TIA proposes that we permit conditional licensing in the 23 GHz band.[172] Previously, however, the Commission concluded that conditional licensing should not be permitted in the 23 GHz band because use of these frequencies must be coordinated by the Commission with NTIA, and the two agencies did not have an agreement concerning conditional licensing on those frequencies for the whole band.[173] In the *Part 101 MO&O and NPRM*, the Commission declined to propose any rule changes for conditional licensing in the 23 GHz band until such an agreement is reached.[174] TIA recognizes that its plan can be adopted only if the Commission and NTIA reach an agreement consistent with the proposals.[175] We note that NTIA has

[166] *See id.* at 22-24.

[167] *See id.* at 2-3.

[168] 47 C.F.R. § 1.2113. *See* Amendment of the Commission's Rules to Establish New Personal Communications Services, Narrowband; Implementation of Section 309(j) of the Communications Act - Competitive Bidding, Narrowband PCS, Gen. Docket No. 90-314, ET Docket No. 92-100, PP Docket No. 93-253, *Second Report and Order and Second Further Notice of Proposed Rule Making*, 15 FCC Rcd 10456, 10489-90 ¶ 79 (2000) (*PCS Second R&O and SFNPRM)*. *See also* Amendment of Part 1 of the Commission's Rules - Competitive Bidding Procedures, *Third Report and Order and Second Further Notice of Proposed Rule Making*, WT Docket No. 97-82, 13 FCC Rcd 374, 469-70 ¶ 168 (1997) (*Part 1 R&O and SFNPRM*).

[169] *Part 1 R&O and SFNPRM*, 13 FCC Rcd at 470 ¶ 169.

[170] *PCS Second R&O and SFNPRM*, 15 FCC Rcd at 10489-90 ¶ 79; *Part 1 R&O and SFNPRM*, 13 FCC Rcd at 470 ¶ 169.

[171] *Id*.

[172] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3158 ¶ 59.

[173] *Part 101 R&O*, 11 FCC Rcd at 13462-63 ¶ 28. The agencies have reached agreements concerning conditional licensing in other bands, but not regarding the 23 GHz band. *See* Reorganization and Revision of Parts 1, 2, 21 and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, *Order*, WT Docket No. 94-148, 13 FCC Rcd 4394 (WTB/OET 1998); Amendment of the Commission's Rules to Relocate the Digital Electronic Message Service From the 18 GHz Band to the 24 GHz Band and to Allocate the 24 GHz Band for Fixed Service, *Order*, ET Docket No. 97-99, 13 FCC Rcd 3581 (1997).

[174] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3159-60 ¶ 61.

[175] *See* TIA Petition at 15.

recommended a procedure to permit more rapid delivery of services and encourage greater use of the 23 GHz band.[176] Specifically, NTIA proposes that the Government Master File (GMF) database of government licensees in the 23 GHz band, which is confidential, could be released to a commercial frequency coordinator with a security clearance.[177]

54. Discussion. Most commenters addressing this issue support TIA's proposal and argue that allowing conditional licensing would permit rapid delivery of services and encourage greater use of the 23 GHz band.[178] They do not, however, address the basic problem identified in the *Part 101 MO&O and NPRM*, which is that such licensing would require an agreement with NTIA that we have not yet reached. Accordingly, we shall maintain our current policy prohibiting conditional licensing in the 23 GHz band until we conclude an appropriate agreement with NTIA.

55. With respect to NTIA's suggestion that the relevant portions of the GMF be made available to a frequency coordinator with a security clearance, the Commission is further exploring this process with NTIA. We delegate to the Wireless Telecommunications Bureau and the Office of Engineering and Technology authority to negotiate and implement such an arrangement. While this arrangement still would not permit conditional operation on any additional frequencies, we believe it would greatly reduce the chance of conflicts between non-Government applications and Government assignments and increase the speed of licensing of systems in the 23 GHz band, thereby increasing the band's usefulness to the fixed microwave community. In addition, such an agreement could serve as the foundation for future proposals to expand conditional authorization in the 23 GHz band.

2. Technical standards

56. When 23 GHz rules were adopted, the Commission did not incorporate complete technical standards in order to afford the industry an opportunity to develop. TIA proposes several changes to the 23 GHz technical rules that it contends will facilitate greater exploitation of the band.[179] We believe that

[176]Letter from William T. Hatch, Chairman, Interdepartment Radio Advisory Committee, National Telecommunications and Information Administration, United States Department of Commerce to Fred Thomas, Liaison Representative, Office of Engineering and Technology, Federal Communications Commission, dated February 19, 1999 (Hatch Letter).

[177]NTIA indicates that given the nature of Federal operations in the 23 GHz band, maintaining the confidentiality of this portion of the database is necessary. We note that, unlike in the Private Land Mobile Radio Services, the Commission does not certify or otherwise qualify entities to act as microwave frequency coordinators. *See* Amendment of the Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Systems, Including Third Generation Wireless Systems, *Notice of Proposed Rule Making and Order*, ET Docket No. 00-258, 16 FCC Rcd 596, 619 ¶ 56 (2001).

[178]*See, e.g.,* Consolidated Spectrum Services (Consolidated) Comments at 1; Giganet Comments at 2; Winstar Comments at 9; NSMA Comments at 14; Fixed Wireless Comments at 15-16; Alcatel Comments at 20-21.

[179]TIA Petition at 15. In order to minimize any adverse impact that these new rules would have on licensees of existing systems and on equipment manufacturers, TIA proposes that the Commission establish an 18-month transition period before manufacturers would be required to meet the new standards, and a 24-month transition period before new installations would have to meet the new standards. *Id*. at 16 n.23. Under TIA's proposal, fixed microwave service stations applied for or licensed by the end of the transition period would be grandfathered indefinitely under the current rules, provided that they do not cause harmful interference to other licensees. *Id*.

the industry is now mature enough to promulgate more complete standards, such as those TIA has proposed.

a. Channel plan

57. Background. Our rules do not specify a channel plan for the 23 GHz band.[180] TIA argues that a channel plan will make the band more efficient, and thus more attractive for short-haul fixed microwave service users.[181] TIA's proposed plan, as a general matter, is based upon the current industry standard 50 MHz channel plan, but, given the availability of more spectrally efficient digital fixed microwave service radios, it also includes narrow and wideband channels to provide flexibility and to increase the number of potential users.[182] Specifically, the plan consists of twenty-four pairs of 50 MHz channels, each subdivided into wideband channels (*i.e.*, one 40 MHz channel, one 30 MHz channel, two 20 MHz channels and five 10 MHz channels) and narrowband channels (*i.e.*, ten 5 MHz channels and twenty 2.5 MHz channels).[183] The center 10 MHz channel in each 50 MHz block would have the same frequency as the associated 50 MHz channel, which would permit upgrades in channel capacity without a frequency change.[184] TIA states that no overlap would be created between the existing 50 MHz channels and the new channels, allowing for an orderly transition to the new plan without causing interference to existing systems; and that the plan would enhance flexibility and spectrum efficiency by avoiding the need to use 50 MHz channels for all needs above 20 MHz.[185] TIA also recommends reserving several portions of the 23 GHz band for narrowband channels, which could be used for wideband traffic only if all other wideband channels are blocked.[186] Finally, TIA proposes making the entire band available to common carrier and POFS users, instead of the current system of reserving half of the band for each.[187] The Commission sought comment on TIA's proposals, their compliance with the Act, and their effect on licensees.[188]

58. The Commission also noted that we routinely license duplex point-to-point private systems which use one channel for video and one channel for control where the control frequency is separated from the video frequency by 50 MHz.[189] These systems are typically used for surveillance or security

[180] TIA Petition at 16.

[181] *See id.*

[182] *See id*. at 17.

[183] *See id.*

[184] *See id.*

[185] *See id.* at 17-18.

[186] *See id.* at 18. The frequencies selected for narrowband channels are the highest numbered channels in the common carrier and POFS segments of the 23 GHz band, which TIA states are the least congested frequencies in the band since frequency planners tend to select the lowest numbered frequencies first. *Id.* at 18 n.28.

[187] *Id.* at 18 n.27.

[188] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3161 ¶ 65.

[189] *See* 47 C.F.R. § 101.147(s).

systems. It sought comment on whether to continue to license these systems, and how TIA's proposed channel plan would affect these users.[190]

59. Discussion. Commenters generally support TIA's proposal.[191] We concur. TIA's proposal will make the 23 GHz band more attractive for the short-haul, high capacity fixed point-to-point terrestrial microwave radio services systems that comprise the backbone of a national wireless infrastructure. Commenters state that this feature is critical for continued growth of wireless Internet access and expansion of private microwave networks for voice and data transmission.[192] In addition, TIA's proposal will also allow more efficient use of the band as operators will be able to license narrower channels for lower capacity links, and will also encourage the development of more spectrally efficient radios to use the narrower channel widths.[193]

60. We also conclude that we should continue to license duplex point-to-point private systems which use one channel for video and one channel for control where the control frequency is separated from the video frequency by 50 MHz. Continuance of this regulatory regime does not conflict with TIA's proposal, as TIA's proposal will not create any overlap between the existing 50 MHz channels and the new channels, allowing for an orderly transition to the new plan without causing interference to existing systems.

b. Frequency tolerance

61. Background. Our current rules specify the frequency tolerance for the 23 GHz band at 0.03%.[194] TIA contends that, when this standard was adopted, most 23 GHz band radios used analog modulation techniques and were coordinated for the full 50 MHz channel bandwidth, but today most licensed radios are digital and occupy 75% or more of the channel bandwidth.[195] TIA states that, for these digital radios, the 0.03% frequency tolerance specification would allow excessive frequency drift into adjacent channels if the band is divided into 50, 40, 30, 20, 10, 5, and 2.5 MHz channels, and that this would cause spectrum inefficiency.[196] TIA recommends applying to the 23 GHz band the same 0.001% frequency tolerance standard that is used for the 18 GHz band (which is divided into narrowband

[190] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3161 ¶ 65.

[191] Telenetics Corporation and Southwest Microwave, Inc. (Telenetics/SMI) Comments at 7; Consolidated Comments at 2; Giganet Comments at 4-5; Winstar Comments at 8; Comsearch Comments at 4-5; NSMA Comments at 7; Fixed Wireless Comments at 7-8; Alcatel Comments at 9; NSMA Reply Comments at 4-5; Alcatel Reply Comments at 4-5.

[192] NSMA Comments at 7; Fixed Wireless Comments at 7.

[193] Comsearch Comments at 4.

[194] 47 C.F.R. § 101.107(a).

[195] TIA Petition at 18-19.

[196] *Id.* at 19.

channels comparable to those adopted above for the 23 GHz band).[197] The Commission sought comment on TIA's proposal, its compliance with the Act, and its effect on licensees.[198]

62. Discussion. Commenters were divided regarding this proposal. Commenters supporting TIA's proposal to require a 0.001% frequency stability[199] argue that the current requirement for 0.03% stability, which is equivalent to a drift of ± 7 MHz, wastes channel capacity.[200] They note that most manufacturers are making only digital radios in this band, which occupy at least 75% of the channel bandwidth, and which only require 0.001% frequency tolerance standard. [201] They state that tightening the frequency tolerance standard to 0.001% is also important because it would reduce consumer costs and increase manufacturer flexibility. Economies of scale could be realized because the 0.001% frequency tolerance also is used for other narrowband radio applications, particularly in the 18 GHz band.[202] Finally, they argue that the existing standard is incompatible with the channel plan adopted above, because it will allow excessive frequency drift into adjacent channels.[203]

63. Other commenters are opposed to TIA's proposal.[204] They state that the proposed standard is not realistic for analog video applications using 50 MHz channels,[205] or radios used for security/monitoring with a return data signal.[206] They note that data radios are more expensive solutions because they require tighter standards, timing, bit error rate, phase noise, etc., while the typical FM analog video radio is a low-cost design with much greater frequency tolerance, typically ± 0.03%.[207] They also argue that any adjacent-channel problem should be addressed directly, by restricting out-of-band emissions, rather than by the indirect frequency tolerance approach that will raise costs significantly. [208] Telenetics/SMI urge that the permitted frequency tolerance remain at 0.05% for 50 MHz channels in

[197] *Id.*

[198] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3161 ¶ 66.

[199] Giganet Comments at 4; Comsearch Comments at 5; NSMA Comments at 8-9; Fixed Wireless Comments at 8-9; Alcatel Comments at 12-13

[200] Giganet Comments at 4; Comsearch Comments at 5. Providing an example, Giganet states that only an occupied bandwidth of up to 36 MHz would be feasible in the 50 MHz channels, and channels less than 15 MHz could not be used at all by radios with such low stability.

[201] NSMA Comments at 8; Fixed Wireless Comments at 8-9; Alcatel Comments at 12; Comsearch Comments at 5.

[202] Fixed Wireless Comments at 9.

[203] NSMA Comments at 8; Fixed Wireless Comments at 9; Alcatel Comments at 12-13; Comsearch Comments at 5.

[204] Telenetics/SMI Comments at 4; API Reply Comments at 7-8.

[205] Telenetics/SMI Comments at 4.

[206] Consolidated Comments at 2.

[207] *Id.*

[208] Telenetics/SMI Comments at 4.

the 21.8-22.2 GHz and 23.0-23.2 GHz bands and be tightened to not less than 0.003% for channels of 30 MHz or less that are created in the remainder of the 23 GHz band.[209]

64. A review of the comments indicates a consensus concerning the standard for digital radios at a frequency tolerance of 0.001%. The main contention concerned existing analog standards and the present need for inexpensive analog radios compared to more expensive digital radios. The Commission's intent was that the 23 GHz band technology had sufficiently developed to take a step toward more rigorous standards without trying to eliminate any existing industries. We believe that TIA's petition has greatly achieved that goal, and that we can take another step towards more efficient standards in the future. Thus, we are adopting two frequency tolerance standards, one for analog radios and one for digital radios. For digital radios, we adopt a frequency tolerance standard of 0.001%. With respect to analog radios, commenters did not strongly object to the arguments presented by Telenetics/SMI, and we believe that adequate coordination efforts and the emission mask standards can allow users to satisfy their service requirements with the frequency tolerance standards we adopt herein. We therefore adopt the following frequency tolerance standard for analog radios in line with Telenetics/SMI's request: 1) if the channel bandwidth is greater than 30 MHz up to 50 MHz, the frequency tolerance standard will be 0.03%; 2) if the channel bandwidth is 30 MHz or less, then the frequency tolerance standard will be 0.003%. We will allow this analog standard provided harmful interference is not caused to stations operating within the new tolerance standards. If harmful interference is caused to stations operating with the more stringent standards, the onus shall be on the operators with the less stringent parameters to develop an engineering solution to the problem.

65. We will require new licensees to meet these standards within twenty-four months of the effective date of the rules adopted herein. Equipment authorized under existing licenses will be grandfathered. New equipment purchases (those purchased after the effective date of the appropriate rule) shall meet the new standard. We will revisit the analog standards when the industry has further matured. However, we do put the industry on notice that the Commission does intend to tighten the analog standard and encourages the industry to consider manufacturing equipment to higher standards than those adopted herein. Our goal is to revisit this area within five years of the effective date of this order to determine if the industry is sufficiently advanced to refine the standards further.

c. Spectrum efficiency

66. Background. TIA argues that the current lack of a spectrum efficiency requirement for the 23 GHz band impedes efficient utilization.[210] Our rules require a 1 bps/Hz (bit per second per Hertz) spectrum efficiency rate for digital modulations for all frequency bands below 19.7 GHz and for the 24.25-25.25 GHz band.[211] TIA contends that this standard also is appropriate for the 23 GHz band (and for all bands below 25.25 GHz), because it would ensure that all proposed bandwidths could be fully utilized, and because the digital 18 GHz band radios that are likely to be retrofitted for 23 GHz band

[209] *Id*.

[210] *See* TIA Petition at 19.

[211] *See* 47 C.F.R. § 101.141(a).

operation are already designed to this standard.[212] The Commission sought comment on TIA's proposal.[213]

67. Discussion. Most commenters support TIA's proposal. They argue that with increasing congestion in all the microwave frequencies including the 23 GHz band, it is inequitable to allow continued inefficient bandwidth utilization by some users while other users are employing newer, bandwidth efficient radios.[214] They also state that the proposed standard would ensure that all frequencies are fully utilized.[215] Finally, they agree that the digital 18 GHz band radio models, that likely would be retrofitted for 23 GHz band operation, are already designed to this standard.[216]

68. Telenetics/SMI opposes TIA's proposal because, although a requirement for spectrum efficiency of 1 bps per Hz may promote more efficient data applications, it does not take into account real-time video applications.[217] It states that this kind of measurement cannot be applied to analog video links and that sales figures indicate that analog video systems outnumber data transmission systems in the 23 GHz band. It argues that adoption of the proposals will require manufacturers to discontinue their analog lines and to design and market only digital systems, which can cost customers three times as much. Telenetics/SMI argues that such a price level would drive many existing users out of the market, leaving them without adequate security and surveillance capability and unable to interconnect their buildings.

69. We agree with the majority of commenters that the public interest favors more efficient use of this spectrum. We therefore adopt TIA's proposal to extend to the 23 GHz band the Commission's present requirement that there be a 1 bps/Hz spectrum efficiency rate for all transmitters using digital modulation in the frequency bands below 25.25 GHz. With the advent of the new channeling plan, we will expect applicants for analog equipment to select smaller channels with only the bandwidth necessary to provide the analog service envisioned. We will grandfather existing licensed equipment for the 23 GHz band without an efficiency rate, but require all new digital equipment to meet the new efficiency standard. Section 101.141 will now state that all 21.2-23.6 GHz band equipment, utilizing digital modulation, applied for or authorized more than twenty-four months after the rule's effective date shall be required to meet the new efficiency standards, but before that date equipment may be installed with no minimum bit rate.

d. Low power systems

70. Background. TIA claims that the 23 GHz frequencies set aside for low power, limited coverage systems, such as perimeter surveillance applications and remote monitoring, are severely congested.[218] TIA proposes designating an additional 200 MHz in the band for low power operations,

[212] *See* TIA Petition at 20.

[213] *See Part 101 MO&O and NPRM*, 15 FCC Rcd at 3162 ¶ 67.

[214] *See* NSMA Comments at 9-10.

[215] *See id.* at 10; Fixed Wireless Comments at 10-11.

[216] *See* NSMA Comments at 9-11; Fixed Wireless Comments at 10-11.

[217] *See* Telenetics/SMI Comments at 2, 4-5.

[218] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3162 ¶ 68 (citing TIA Petition at 20).

adjacent to the current low power band in the 21.8-22.0 GHz and 23.0-23.2 GHz band segments, in order to relieve congestion in the current low power band.[219] In addition, TIA states that the Part 101 requirements for these low power, limited coverage systems are not congruent with their operations and should be revised as follows:[220]

> a) Maximum Power Definition -- Change the maximum power from 55 dBm ERP[221] to 55 dBm EIRP, because the maximum power for fixed microwave service systems is expressed as EIRP, and ERP is appropriate for mobile, not fixed, services.[222]
>
> b) Frequency Tolerance -- Apply the proposed 0.001% frequency tolerance standard to all systems, including low power, limited systems, rather than the current 0.05% standard for such systems.[223]
>
> c) Special Showings -- Delete as no longer necessary the requirement that an applicant make a showing of need in order to be authorized to operate with a 50 MHz bandwidth or to have more than five hops in tandem.[224]
>
> d) Interference Criteria -- Use a uniform frequency coordination procedure for all services in the 23 GHz band, and thus delete the specific additional interference criteria for low power, limited coverage systems, which, according to TIA, typical radios already meet, anyway.[225]

71. Discussion. Some commenters support the allocation of an additional 200 MHz for low power operations because those 23 GHz band frequencies that are set aside for low power, limited coverage systems are severely congested.[226] Another commenter states that the entire band should be designated for Low Power Limited Coverage Systems with transmitter powers of less than 0.1 watts.[227] We agree with Comsearch, however, that designating additional 23 GHz channels for low power limited coverage systems would serve little purpose.[228] The Commission's Rules specify only maximum power

[219] *See* TIA Petition at 20-21. TIA would reserve these additional 200 GHz frequencies primarily for narrowband systems, but permit wideband systems also if no other appropriate frequencies are available. *See id.* at 21 n.31.

[220] *See id.* at 21-22.

[221] 47 C.F.R. § 101.147(s)(1).

[222] ERP is a term of reference to dipole, yagi, or other base and mobile antennas, while EIRP refers to isotropic radiators such as parabolic microwave antennas. The difference between 55 dBW ERP and 55 dBW EIRP is 2.15 dB.

[223] 47 C.F.R. § 101.147(s)(3).

[224] 47 C.F.R. § 101.147(s)(5)-(6).

[225] 47 C.F.R. § 101.147(s)(7).

[226] *See, e.g.,* Telenetics/SMI Comments at 6; Alcatel Comments at 15.

[227] *See* Consolidated Comments at 3.

[228] *See* Comsearch Comments at 5-6.

levels, so low power systems already are permitted throughout the band. If congestion is encountered on the four specific low power channel frequency pairs, operators can use any other 23 GHz channel without the necessity of designating additional low power channels. Furthermore, according to Comsearch, designating additional low power channels would aggravate congestion in the rest of the 23 GHz band, which has increased significantly in some areas since TIA filed its petition.[229]

72. Regarding the change of maximum output power definition from 55 dBm ERP to 55 dBm EIRP, we agree with the commenters that changing the definition will better fit microwave terminology and perhaps facilitate better use of the 23 GHz band by Fixed Service users,[230] and we modify this rule. NTIA has agreed to this change. However, we do not adopt TIA's proposal to delete the other requirements in Section 101.147(s) that an applicant make a showing of need in order to be authorized to operate with a 50 MHz bandwidth or to have more than five hops in tandem. We reiterate that this is a shared Government/non-Government band. These requirements reduce the burden on NTIA of coordinating use of the band.

73. Commenters also support TIA's proposal to adopt a uniform frequency coordination procedure for the entire 23 GHz band, which they say would allow Fixed Service users greater opportunity to utilize the band.[231] We reject this proposal. As noted above, conditional licensing in the 23 GHz band is available only on the four channels specified in Section 101.147(s),[232] and these channels are utilized on a non-coordinated basis. A "uniform frequency coordination procedure" would amount to either conditional licensing throughout the band or the removal of the uncoordinated low power channels. We believe that this would remove some of the flexibility that licensees now have. As noted above in our discussion of temporary and conditional authorization, we do not have an agreement with NTIA to allow conditional authorization on any 23 GHz band frequencies other than the four identified in Section 101.147(s).

3. Antenna standards for the 23 GHz and 10 GHz bands

74. Background. TIA states that many fixed microwave users need or prefer to employ small antennas because most potential antenna sites, such as rooftops, monopoles, and electrical transmission towers, cannot support large microwave dishes, due to either space limitations or aesthetic objections of homeowner associations or zoning boards.[233] Our rules, however, do not permit antennas smaller than 0.61 meters (2 feet) in diameter in the 23 GHz band, or 1.22 meters (4 feet) in diameter in the 10 GHz band.[234] Antenna standards exist for the purpose of warranting the use of the most discriminating equipment to facilitate the introduction of new transmission paths.[235] TIA recommends permitting 0.46-

[229] *See id.*

[230] *See id.* at 5; Alcatel Reply Comments at 13-14; NSMA Comments at 11-12; Fixed Wireless Comments at 11-12; API Comments at 11-13.

[231] *See* NSMA Comments at 11-12; Alcatel Comments at 15-16; Fixed Wireless Comments at 11-12; API Comments at 13.

[232] *Supra* ¶ 23.

[233] *See* TIA Petition at 22.

[234] *See* 47 C.F.R. §§ 101.115, 101.147(s).

[235] *Part 101 R&O*, 11 FCC Rcd at 13474 n.106.

meter (18-inch) or 0.30 meter (1-foot) high performance antennas in the 23 GHz band, and 0.61-meter (2-foot) or 1.22-meter (4-foot) antennas in the 10 GHz band.[236] To permit 0.46-meter (18-inch) or 0.30-meter (1-foot) diameter antennas in the 23 GHz band, which will accommodate what TIA expects will be an increased need for short (*i.e.*, one-to-two miles) microcell interconnect and LMDS infrastructure link point-to-point microwave paths, TIA recommends that the Commission take the following actions:[237]

a) Change the minimum antenna gain from 38 dBi to 33.5 dBi.

b) Change the maximum beamwidth from 2.2 to 3.3 degrees.

c) Retain the same front-to-back ratios as the current Category A and Category B radiation standards, tighten the Category B front-to-back ratio, and reduce the sidelobe suppression requirements.[238]

To permit 0.61 meter (2-foot) antennas in the 10 GHz band, which would accommodate paths longer than 2.3 miles, TIA proposes that the Commission take the following actions:[239]

a) Change the minimum antenna gain from 38 dBi to 33.5 dBi.[240]

b) Change the maximum beamwidth from 3.4 to 3.5 degrees so that there would be a uniform beamwidth for all 10 GHz band systems.

c) Change the radiation standards for Category A and Category B to the same standards that applied for the 10.55-10.68 GHz band before June 1, 1997,[241] tighten the front-to-back ratio for Category B channels, and reduce the sidelobe suppression requirements.[242]

The Commission sought comment on TIA's proposals and their effect on licensees.[243]

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[236] *See* TIA Petition at 23.

[237] *See id.* at 23-24; TIA Reply Comments at 7.

[238] The 0.46-meter (18-inch) diameter antenna would qualify under Category A and the 0.30-meter (1-foot) diameter antennas would qualify under Category B. *See* TIA Petition at 24.

[239] *See id.* at 24-25; TIA Reply Comments at 7.

[240] This proposal is consistent with the Commission's decision regarding directional antennas. *See* Amendment of Parts 74, 78, 101 of the Commission's Rules to Adopt More Flexible Standards for Directional Microwave Antennas, *Report and Order*, ET Docket No. 96-35, 12 FCC Rcd 1016, 1035 (1997).

[241] *See* 47 C.F.R. § 101.115 (1996).

[242] These new radiation standards would permit use of a shrouded 0.61 meter (2-foot) high performance antenna to meet Category B specifications and an unshrouded 1.22 meter (4-foot) standard antenna to meet Category A specifications. *See* TIA Petition at 25.

[243] *See Part 101 MO&O and NPRM*, 15 FCC Rcd at 3164-65 ¶¶ 71-73.

75. Discussion. Commenters agree[244] that TIA's proposed modifications to the antenna pattern requirements to allow the use of smaller antennas would make microwave technology available to some users who are now precluded by physical size restrictions at their location.[245] Further, Commenters state that these antennas will be appropriate for short microcell interconnect and LMDS infrastructure point-to-point microwave paths.[246]

76. As Alcatel points out, technical parameters must be changed to achieve more widespread access to the 23 GHz and 10 GHz bands. The modifications that are necessary include reduced mainbeam gain, increased beamwidth, and reduced sidelobe suppression requirements.[247] Increasing the beamwidth and reducing the sidelobe suppression requirements are changes that would, assuming a constant EIRP, increase the interference potential of a station.[248] Therefore, the benefit to users that results from using smaller antennas must be weighed against the possible harm to the interference environment.[249] Counterbalancing the reduced sidelobe suppression requirements is the proposal to significantly tighten the Category B antenna front-to-back ratio requirements.[250]

77. The coordination industry is faced with an increasingly congested interference environment.[251] Thus, we are very concerned about the danger that the larger beamwidth and poorer sidelobe suppression of the smaller diameter antennas will result in increased interference. On balance, we accept the proposed modifications to the antenna pattern requirements. The benefits of smaller antennas in terms of aesthetics and structure loading are undeniable.[252] We believe that the overall increase in interference potential that results from the proposed changes should be relatively minor and that improving the Category B antenna pattern requirements from 100^0 to 180^0 as proposed is of great benefit in reducing the potential for harmful interference. We are persuaded, therefore, that adoption of TIA's proposals is in the public interest because they will promote increased usage of the 10 and 23 GHz bands in areas where these frequencies are underutilized.[253]

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[244] *See* Telenetics/SMI Comments at 7; Giganet Comments at 5; Comsearch Comments at 6-8; Alcatel Comments at 17-18; Fixed Wireless Comments at 12-14; NSMA Reply Comments at 11-12; Alcatel Reply Comments at 14-15.

[245] *See* Telenetics/SMI Comments at 7.

[246] *See* Giganet Comments at 5.

[247] Alcatel Reply Comments at 15 (citing Comsearch Comments at 6).

[248] Alcatel Reply Comments at 15 (citing Comsearch Comments at 6-7).

[249] Alcatel Reply Comments at 15-16 (citing Comsearch Comments at 7).

[250] Alcatel Reply Comments at 16 (citing Comsearch Comments at 7).

[251] Alcatel Reply Comments at 16 (citing Comsearch Comments at 7).

[252] Alcatel Reply Comments at 16 (citing Comsearch Comments at 7).

[253] *See* Comsearch Comments at 8; *see also* Alcatel Reply Comments at 15.

C. Balanced Budget Act of 1997

78. The Commission sought comment in the *NPRM* on a number of issues regarding the impact of the Balanced Budget Act of 1997 on our licensing approach under Part 101 of the Commission's Rules.[254] The Balanced Budget Act[255] amended Section 309(j) of the Communications Act to provide that, consistent with Section 309(j)(6)(E),[256] all mutually exclusive applications for initial licenses or construction permits shall be auctioned, except licenses and construction permits for public safety radio services, digital television service existing analog television licensees, and non-commercial educational radio and television stations.[257] The majority of commenters addressing the Balanced Budget Act in this proceeding argue that the current Part 101 licensing procedures[258] should be retained.[259]

79. We will partially address these issues here with respect to Part 101 spectrum. In particular, subsequent to the release of the *Notice of Proposed Rule Making*, the Commission made certain general determinations regarding our implementation of the Balanced Budget Act of 1997, to which we will adhere with respect to fixed spectrum.[260] For instance, we will follow the principles set forth in that proceeding for determining whether particular spectrum qualifies for the statutory exemption of public safety radio services from our auction authority.[261] However, we will not at this time make any changes

[254] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3165-70 ¶¶ 74-82.

[255] Pub. L. No. 105-33, Title III, 111 Stat. 251 (1997).

[256] Section 309(j)(6)(E) states that, in determining the auctionability of applications, the Commission has the "obligation in the public interest to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means to avoid mutual exclusivity in application and licensing proceedings." 47 U.S.C. § 309(j)(6)(E).

[257] *See* 47 U.S.C. § 309(j)(1)-(2). Section 309(j) formerly stated that mutually exclusive applications for initial licenses or construction permits were auctionable if the principal use of the spectrum was for subscriber-based services and competitive bidding would promote the expressed objectives of the Communications Act. *See* 47 U.S.C. § 309(j)(2) (1996).

[258] Currently, licensing of general Part 101 frequencies is based on the specific use of specific frequencies, and applicants are responsible for coordinating interference issues prior to filing a license application. Consequently, under the current licensing scheme, mutually exclusive situations rarely, if ever occur. *See Part 101 MO&O and NPRM*, 15 FCC Rcd at 3166 ¶ 75.

[259] *See*, *e.g.*, Alcatel Comments at 30-31; API Comments at 17-18; APS Comments at 6; Association of Public Safety Communications Officials-International, Inc. Comments at 4-5; Fixed Wireless Comments at 23-24; City of Long Beach, California Comments at 5; Satellite Industry Association Comments at 10-11; UTC Comments at 4; Winstar Comments at 10.

[260] Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, *Memorandum Opinion and Order*, WT Docket 99-87, FCC 02-82 (rel. Apr. 18, 2002) (*BBA MO&O*); Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended, *Report and Order and Further Notice of Proposed Rule Making*, WT Docket No. 99-87, 15 FCC Rcd 22709 (2000) (*BBA R&O and FNPRM*).

[261] *BBA R&O and FNPRM*, 15 FCC Rcd at 22740-52 ¶¶ 63-87; *see also BBA MO&O*, ¶¶ 19-41.

to the Part 101 licensing regimes, or designate any Part 101 spectrum as public safety radio services.[262] Rather, we will examine whether to do so in a future proceeding regarding flexible use policies and other matters concerning all fixed spectrum regulated by the Commission.

80. We will make one rule change with respect to geographic licensing. Prior to the revision of Part 101, the first line of Section 101.55(a) read: "Licenses not authorized pursuant to competitive bidding procedures may not be assigned or transferred prior to completion of construction of the facility." The *Part 101 MO&O and NPRM* inadvertently without discussion or notice changed the first line of this section to read, "Except as provided for in paragraph (d) of this section, licenses may not be assigned or transferred prior to the completion of construction of the facility." The change resulted in requiring that all licensees have to construct a facility before transfer or assignment of a license. The removal of the exception for auctioned licensees was not intended. We correct the error by changing the first paragraph of Section 101.55(a) to read as follows: "Except as provided for in paragraph (d) of this section, licenses not authorized pursuant to competitive bidding procedures may not be assigned or transferred prior to the completion of construction of the facility."

D. Forbearance and Regulatory Flexibility

1. Forbearance

81. Background. Section 10 of the Act provides the Commission with the authority to forbear from applying sections of the Act and the Commission's Rules if the Commission determines that enforcement is not necessary to protect consumers and to ensure just and reasonable charges, practices, classifications, and regulations, and that forbearance is consistent with the public interest.[263] In the *Part 101 MO&O and NPRM*, the Commission sought comment on the appropriateness of forbearing from enforcing any provisions of the Act or the Commission's Rules with respect to Part 101 services.[264]

82. Discussion. Winstar, the only commenter to discuss this issue, urges us to invoke our forbearance authority to exempt geographic licensees from Part 101 information-posting and record-keeping requirements.[265] Winstar specifically recommends that the Commission forbear from enforcing Section 101.215,[266] which requires licensees to post licensee contact information at each station; and Section 101.217,[267] which requires licensees to maintain records of transmitter measurements and of any service or maintenance duties that may affect proper station operation for at least one year.[268] Winstar also

[262] *But see* The 4.9 GHz Band Transferred from Federal Government Use, *Second Report and Order and Further Notice of Proposed Rule Making*, WT Docket No. 00-32, 17 FCC Rcd 3955, 3976 ¶ 45 (2002) (seeking comment on whether the 4.9 GHz band should be a public safety radio service).

[263] 47 U.S.C. § 160(a)(1)-(3).

[264] *See Part 101 MO&O and NPRM*, 15 FCC Rcd at 3171 ¶ 83.

[265] *See* Winstar Comments at 2.

[266] *See* 47 C.F.R. § 101.215.

[267] *See* 47 C.F.R. § 101.217.

[268] *See* Winstar Comments at 2.

suggests that the Commission forbear from enforcing the requirement of Section 101.149(b)[269] that each station operating in the 39 GHz band post a copy of the service area authorization.[270] Winstar argues that it is unnecessarily burdensome to require such information at each site because geographic licensees operate thousands of facilities across the country[271] and "interference problems are virtually non-existent for geographic licensees when compared to the potential for interference that arises from point-to-point site specific licensees."[272]

83. The Commission considered and rejected a virtually indistinguishable request by Winstar in 1998.[273] In rejecting Winstar's request, the Commission stressed the importance of those provisions in protecting the public.

> This Commission consistently maintains rules requiring the transmitter sites be identified with either the station authorization or with information indicating where the station information can be found. . . . We believe that availability of this information is important to ensure accountability of the licensee to the public. For example, a transmitter causing interference due to poor maintenance or accident can be found with direction-finding equipment, but without information regarding the owner/operator available at the site, an aggrieved party will not know who to contact for relief for interference. This on-site information becomes even more important because elsewhere in this *Report and Order* we relieve licensees of the requirement to file the location of each of its transmitters with this Commission.[274]

The Commission further emphasized that the record-keeping requirement of Section 101.217 is just "as important for geographic licensees as it is for site-based licensees."[275] In fact, the Commission reasoned that "[i]t becomes even more important that licensees keep complete records of their transmitters because under the ULS, this Commission will no longer collect that information unless it is necessary to review the information in connection with a complaint or other question regarding transmitter engineering."[276]

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[269] *See* 47 C.F.R. § 101.149(b).

[270] *See* Winstar Comments at 2.

[271] *See id.*

[272] *Id.* at 4.

[273] As part of an extensive review and revision of the Commission's Rules in 1998, Winstar asked the Commission to amend Sections 101.149(b), 101.215, and 101.217 to exempt geographic licensees from the very same information-posting and record-keeping requirements presently under consideration. *See ULS Proceeding*, 13 FCC Rcd at 21099-21100 ¶ 164.

[274] *Id.* at 21100 ¶ 164.

[275] *Id.* The Commission imposes similar record-keeping requirements upon geographic licenses under Part 90 of the Commission's Rules. *See* 47 C.F.R. §§ 90.443-90.447.

[276] *ULS Proceeding*, 13 FCC Rcd at 21100 ¶ 164.

84. Although Winstar recognizes that the Commission rejected a "similar proposal" by it in 1998,[277] Winstar fails to address any of the concerns that animated the Commission's decision or to argue that circumstances have changed since that time. Rather, Winstar argues that the Commission's Rules are unnecessarily burdensome on geographic licensees because "building engineers"[278] and the ULS[279] could provide the public with the same information. We disagree. We reject Winstar's suggestion that an amorphous group of "building engineers" could replace the licensee as a source of information or provide consumers and the public with similar protections and assurances. We also reject Winstar's contention that the ULS discharges a licensee of its responsibility to provide the information required by Sections 101.149(b), 101.215, and 101.217. The Commission has consistently reaffirmed the importance of the information-posting and record-keeping requirements. When the Commission implemented ULS,[280] it stressed the heightened importance of Part 101 information-posting and record-keeping requirements.[281] Moreover, the Commission specifically found the provisions necessary to protect consumers and the public interest and to ensure licensee accountability.[282] The record in this proceeding does not suggest otherwise. Therefore, we decline to exercise our forbearance authority under Section 10 of the Act to exempt geographic-licensees from the information-posting and record-keeping requirements of Sections 101.149(b), 101.215, and 101.217.

2. Regulatory flexibility

85. Background. The Commission also sought comment on whether the type of regulatory flexibility the Commission has permitted in other services is appropriate for Part 101 licensing.[283] For example, 39 GHz band[284] and some MAS[285] licensees are permitted to conduct point-to-point, point-to-multipoint, or (upon the establishment of interference criteria) mobile operations. In both instances, the

[277] *See* Winstar Comments at 4.

[278] *See id.* at 4-5. Winstar reasons that, because most equipment is installed on a "building by building basis" and is located in areas of buildings that are generally inaccessible to the public, "one could simply contact the building engineer for information about the communications companies operating in the building." *Id.* at 4.

[279] *See id.* at 5. Winstar contends that "any person with internet access" could rely on the ULS to determine the identity of the geographic licensee and to create customized maps to view the market areas of a geographic licensee. *See id.*

[280] *See, e.g.*, *ULS Proceeding*, 13 FCC Rcd at 21092-93 ¶¶ 145-48, 21099-21100 ¶ 164.

[281] *See, e.g., id.* at 21093 ¶ 148, 21097 ¶ 159, 21099-21100 ¶ 164.

[282] *See id.* at 21099-21100 ¶ 164.

[283] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3171 ¶ 84.

[284] Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands; Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, 37.0-38.6 GHz and 38.6-40.0 GHz, *Report and Order and Second Notice of Proposed Rule Making*, 12 FCC Rcd 18600, 18613-15 ¶¶ 20-25 (1997) (*39 GHz Order*).

[285] *See MAS Report and Order*, 15 FCC Rcd at 11999 ¶ 103. Specifically, MAS geographic licensees may engage in mobile operations, but only mobile master stations (not mobile remote stations) may be used by site-based licensees. Amendment of the Commission's Rules Regarding Multiple Address Systems, *Memorandum Opinion and Order*, WT Docket No. 97-81, 16 FCC 12181, 12194-95 ¶¶ 30-33 (2001). *See also infra*, ¶ 109.

Commission concluded that lifting the existing operational restrictions would enable providers to broaden the array of services they offer in order to respond to changing marketplace demands.[286] The Commission sought comment on whether some or all other Part 101 licensees also should be permitted to provide such services.

86. Discussion. Two commenters oppose extending the regulatory flexibility to offer mobile services on the grounds that, while such operational flexibility may be appropriate in geographically licensed spectrum, it is not a feasible option in bands designated for site-by-site licensing.[287] They argue that permitting mobile operations would make it increasingly difficult to coordinate new systems and to identify and remedy threats or occurrences of interference to Fixed Service licensees.[288] They state that the Commission should not endanger the viability of systems that are licensed on a site-by-site basis and used for important safety-related private systems such as those employed by critical infrastructure industries as a result of a misguided assumption that maximum operational flexibility is always in the public interest.[289] Two other commenters theoretically support the Commission's efforts to broaden the array of services offered by Part 101 microwave licensees including allowing licensees to conduct mobile operations on channels, but also express concern that mobile operations could pose a significant risk for interference among microwave licensees.[290]

87. We conclude that we should not permit point-to-multipoint or mobile operations on general Part 101 spectrum at this time. We believe that we would need to examine several factors with respect to each band before permitting this use, including 1) interference considerations, which vary from band to band; 2) the allocations in the Table of Frequency Allocations in Section 2.106; 3) the current state of technology; 4) sharing considerations with fixed and other users of the same spectrum; and 5) nondirectional nature of point-to-point and mobile operations. In some bands, such as 39 GHz, we have allowed mobile operations and have the necessary allocation in 2.106, but the Commission needs to take further action to develop inter-license and inter-service interference standards before we can implement the service.[291] In other bands, such as 24 GHz, however, we do not allow mobile operations and do not have the allocation in Section 2.106. Thus, each band will require one or more actions by the Commission to implement such service and to determine the technical parameters. The record in this proceeding does not allow us to make the necessary determinations. Nor does it reflect great demand among licensees for such flexibility. Therefore, we will take no further steps to implement such operations at this time.

[286] *39 GHz Order*, 12 FCC Rcd at 18614 ¶ 23; *MAS Report and Order*, 15 FCC Rcd at 11999-12000 ¶¶ 101-05.

[287] API Comments at 19; APS Comments at 9. APS also opposes permitting point-to-multipoint operations. APS Comments at 9. No other party commented regarding such operations.

[288] API Comments at 19; APS Comments at 9.

[289] API Comments at 19.

[290] SCG&E Reply Comments at 4; Commonwealth Reply Comments at 2-3.

[291] *39 GHz Order*, 12 FCC Rcd at 18615 ¶ 25.

IV. PROCEDURAL MATTERS

A. Regulatory Flexibility Act Analysis

88. A Final Regulatory Flexibility Analysis (FRFA) with respect to the *Report and Order*, pursuant to the Regulatory Flexibility Act (RFA),[292] is contained in Appendix C. The Commission's Consumer Information Bureau, Reference Information Center, will send a copy of this *Report and Order*, including the FRFA, to the Chief Counsel of the Small Business Administration in accordance with the RFA.

B. Paperwork Reduction Act of 1995 Analysis

89. This *Report and Order* contains a new information collection. As part of its continuing effort to reduce paperwork burdens, we invite the general public and the Office of Management and Budget (OMB) to take this opportunity to comment on the information collections contained in this *Report and Order* as required by the Paperwork Reduction Act of 1995, Pub. L. No. 104-13. Public and agency comments are due on or before **[insert date 60 days after date of publication in the Federal Register]**; OMB comments are due 60 days after publication of the *Report and Order* in the Federal Register. Comments should address: (a) whether the modified collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's burden estimates; (c) ways to enhance the quality, utility and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

90. In addition to filing comments on the information collections contained in this *Report and Order* with the Secretary, a copy of any comments on the information collections should be submitted to Judy Boley, Federal Communications Commission, Room 1-C804, 445 12th Street S.W., Washington, DC 20554, or via the Internet to jboley@fcc.gov and to Edward Springer, OMB Desk Officer, 10236 NEOB, 725 17th Street, N.W., Washington, DC 20503 or via the Internet to edward.springer@omb.eop.gov.

C. Further Information

91. Alternative formats (computer diskette, large print, audio cassette, and Braille) are available to persons with disabilities by contacting Brian Millin at (202) 418-7426, TTY (202) 418-7365, or via email at bmillin@fcc.gov This *Report and Order* can also be downloaded at http://www.fcc.gov/wtb/orders/fcc02__.doc.

92. For further information concerning this *Report and Order*, contact Edward Hayes or Michael Pollak of the Wireless Telecommunications Bureau, Public Safety and Private Wireless Division at (202) 418-0680 (voice), (202) 418-7233 (TTY).

V. ORDERING CLAUSES

93. Accordingly, pursuant to Sections 1, 2, 4(i), 5(c), 7(a), 11(b), 301, 302, 303, 307, 308, 309(j), 310, 312a, 316, 319, 323, 324, 332, 333, 336, 337, and 351 of the Communications Act of 1934, as

[292] *See* 5 U.S.C. § 604.

amended, 47 U.S.C. §§ 151, 152, 154(i), 155(c), 157(a), 161(b), 301, 302, 303, 307, 308, 309(j), 310, 312a, 316, 319, 323, 324, 332, 333, 336, 337, 351, and Sections 1.421 and 1.425 of the Commission's Rules, 47 C.F.R. §§ 1.421, 1.425, IT IS ORDERED that the *Report and Order* in this proceeding IS HEREBY ADOPTED.

94. IT IS FURTHER ORDERED that Part 101 of the Commission's Rules IS AMENDED as set forth in Appendix B, and that these rules shall be effective **[insert date 60 days after publication in the Federal Register]**, except that the information collection contained in these rules become effective **[insert date 70 days after publication in the Federal Register]**, following OMB approval, unless a notice is published in the Federal Register stating otherwise.

95. IT IS FURTHER ORDERED that the Commission's Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this *Report*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the U.S. Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDICES

APPENDIX A: List of Commenters in WT Docket No. 00-19 AND RM-9418

Comments

1. Alcatel USA, Inc. (Alcatel)
2. American Petroleum Institute (API)
3. Arizona Public Service Company (APS)
4. Association of Public-Safety Communications Officials-International, Inc. (APCO)
5. California Public-Safety Radio Association (CPRA)
6. City of Long Beach, California (Long Beach)
7. Comsearch
8. Consolidated Spectrum Services (Consolidated)
9. County of Los Angeles (L.A. County)
10. DIRECTV, Inc. (DIRECTV)
11. Echostar Satellite Corporation (Echostar)
12. Fixed Wireless Communications Coalition (Fixed Wireless)
13. Giganet Wireless Systems, Inc. (Giganet)
14. Motorola, Inc. (Motorola)
15. National Spectrum Managers Association (NSMA)
16. Nextel Communications, Inc. (Nextel)
17. Radscan, Inc. (Radscan)
18. Revelation, L.L.C.
19. County of Riverside (Riverside)
20. Satellite Broadcasting and Communications Association (SBCA)
21. Satellite Industry Association (SIA)
22. Society of Broadcast Engineers (SBE)
23. Stratos Offshore Services Company (Stratos)
24. Telenetics Corporation and Southwest Microwave, Inc. (Telenetics/SMI)
25. Triton Network Systems, Inc. (TNS)
26. United Telecom Council (UTC)
27. Winstar Communications, Inc. (Winstar)

Reply Comments

1. Alcatel
2. API
3. Badgert Meter, Inc. (Badger)
4. Consolidated Edison of New York, Inc. (ConEd)
5. Commonwealth Edison Company (Commonwealth Edison)
6. DIRECTV
7. Dobson Communications Corporation (Dobson)
8. Motorola
9. NSMA
10. Public Safety Wireless Network Program (PSWN Program)
11. SIA
12. Stratos
13. SBC Communications Inc. (SBC)

14. South Carolina Electric & Gas Company (SCE&G)
15. Telenetics/SMI
16. Teligent, Inc. (Teligent)
17. UTC

APPENDIX B - Final Rules

Part 101 of Chapter 1 of Title 47 of the Code of Federal Regulations is amended as follows:

PART 101 - FIXED MICROWAVE SERVICES

1. The authority citation for Part 101 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 303.

2. Section 101.3 is amended by removing the definition for MHz Service Bands and by revising the Multiple address system (MAS) definition to read as follows:

§ 101.3 Definitions

* * * * *

Message center. The point at which messages from members of the public are accepted by the carrier for transmission to the addressee.

Microwave frequencies. As used in this part, this term refers to frequencies of 890 MHz and above.

* * * * *

Multiple address system (*MAS*). A point-to-multipoint or point-to-point radio communications system used for either one-way or two-way transmissions that operates in the 928/952/956 MHz, the 928/959 MHz or the 932/941 MHz bands in accordance with 101.147.

* * * * *

2. Section 101.5 is amended by revising paragraph (b) to read as follows:

§ 101.5 Station authorization required.

* * * * *

(b) A separate application form must be filed electronically via ULS for each Digital Electronic Message Service (DEMS) Nodal Station. No license is required for a DEMS User Station or for a Multiple Address System (MAS) remote or mobile station. Authority for a DEMS Nodal Station licensee to serve a specific number of user stations to be licensed in the name of the carrier must be requested on FCC Form 601 filed for the DEMS Nodal Station. Authority for any number of MAS remotes and authority to serve MAS mobiles (to the extent this part permits such operation) within a specified area will be included in the authority for the MAS fixed master stations.

* * * * *

3. Section 101.31 is amended by removing paragraphs (a)(3)-(5) and (b)(4) and redesignating paragraph (a)(6) as (a)(3), and revising paragraphs (a)(2), the redesignated (a)(3), (b)(1), (b)(1)(vii) and (b)(3) to read as follows:

§ 101.31 Temporary and conditional authorizations.

(a)(1) * * *

(a)(2) Applications for authorizations to operate stations at temporary locations under the provisions of this section shall be made upon FCC Form 601. Blanket applications may be submitted for the required number of transmitters. An application for authority to operate a fixed station at temporary locations must specify the precise geographic area within which the operation will be confined. The area specified must be defined as a radius of operation about a specific coordinate (latitude/longitude), or as a county, or as a State. Exception to this specific requirement may be made for exceptionally large areas, such as the continental United States. Sufficient data must be submitted to show the need for the proposed area of operation.

(a)(3) Operations in the 17.8-19.7 GHz band are prohibited in the areas defined in §1.924 of this chapter. Operations proposed in the areas defined in §1.924 of this chapter may not commence without prior specific notification to, and authorization from, the Commission.

* * *

(b) *Conditional authorization.* (1) An applicant for a new point-to-point microwave radio station(s) or a modification of an existing station(s) in the 952.95-956.15, 956.55-959.75, 3,700-4,200; 5,925-6,425; 6,525-6,875; 10,550-10,680; 10,700-11,700; 11,700-12,200; 12,700-13,200; 13,200-13,250; 17,700-19,700; and 21,800-22,000 MHz, and 23,000- 23,200 MHz bands (see §101.147(s) for specific service usage) may operate the proposed station(s) during the pendency of its applications(s) upon the filing of a properly completed formal application(s) that complies with subpart B of part 101 if the applicant certifies that the following conditions are satisfied:

* * * * *

(vii) With respect to the 21.8-22.0 GHz and 23.0- 23.2 GHz band, the filed application(s) does not propose to operate on a frequency pair centered on other than 21.825/23.025 GHz, 21.875/23.075 GHz, 21.925/23.125 GHz or 21.975/23.175 GHz and does not propose to operate with an E.I.R.P. greater than 55 dBm. The center frequencies are shifted from the center frequencies listed above for certain bandwidths as follows: add 0.005 GHz for 20 MHz bandwidth channels, add 0.010 GHz for 30 MHz bandwidth channels, and subtract 0.005 GHz for 40 MHz bandwidth channels. See specific channel listings in § 101.147(s).

* * *

(3) Conditional authorization does not prejudice any action the Commission may take on the subject application(s). Conditional authority is accepted with the express understanding that such authority may be modified or cancelled by the Commission at any time without hearing if, in the Commission's discretion, the need for such

action arises. An applicant operating pursuant to this conditional authority assumes all risks associated with such operation, the termination or modification of the conditional authority, or the subsequent dismissal or denial of its applications(s).

* * * * *

4. Section 101.55 is amended by revising paragraph (a) and removing paragraph (e) to read as follows:

§ 101.55 Considerations involving transfer or assignment applications.

(a) Except as provided for in paragraph (d) of this section, licenses not authorized pursuant to competitive bidding procedures may not be assigned or transferred prior to the completion of construction of the facility.

* * * * *

4. Section 101.101 is amended by revising the specific entries in the table to read as follows:

§ 101.101 Frequency availability.

FREQUENCY (MHz)	BAND	RADIO SERVICE				
		COMMON CARRIER (Part 101)	PRIVATE RADIO (Part 101)	BROADCAST AUXILIARY (Part 74)	OTHER (Parts 15, 21, 24, 25, 74, 78, & 100)	NOTES
* * *		* * *	* * *	* * *	* * *	* * *
2450 – 2500		CC	OFS	TV BAS	ISM	F/M/TF
* * *						
18,820-18,920		CC	OFS		SAT	
* * *						
19,160-19,210		CC	OFS		SAT	
* * *						

* * * * *

5. Section 101.107 is amended by revising the table in paragraph (a) to read as follows:

§ 101.107 Frequency tolerance.

(a) * * *

Frequency (MHz)	FREQUENCY TOLERANCE (PERCENT)
928 to 929 (5)	0.0005
932 to 932.5	0.00015
932.5 to 935	0.00025
941 to 941.5	0.00015
941.5 to 944	0.00025
952 to 960 (5)	0.0005
1,850 to 1,990	0.002
2,110 to 2,200	0.001
2,450 to 2,500 (1)	0.001
3,700 to 4,200 (1)	0.005
5,925 to 6,875 (1)	0.005
10,550 to 11,700 (1)(2)	0.005
11,700 to 12,200 (1)	0.005
12,200 to 13,250 (4)	0.005
14,200 to 14,400	0.03
17,700 to 18,820 (3)	0.003
18,820 to 18,920 (3)	0.001
18,920 to 19,700 (3)	0.003
19,700 to 27,500 (4)(7)	0.001
27,500 to 28,350	0.001
29,100 to 29,250	0.001
31,000 to 31,300 (6)	0.001
31,300 to 40,000 (4)	0.03

(1) Applicable only to common carrier LTTS stations. Tolerance for 2450-2500 MHz is 0.005%. Beginning Aug. 9, 1975, this tolerance will govern the marketing of LTTS equipment and the issuance of all such authorizations for new radio equipment. Until that date new equipment may be authorized with a frequency tolerance of .03% in the frequency range 2,200 to 10,500 MHz and .05% in the range 10,500 MHz to 12,200 MHz, and equipment so authorized may continue to be used for its life provided that it does not cause interference to the operation of any other licensee.

(2) See subpart G of this part for the stability requirements for transmitters used in the Digital Electronic Message Service.

(3) Existing type accepted equipment with a frequency tolerance of ±0.03% may be marketed until December 1, 1988. Equipment installed and operated prior to December 1, 1988 may continue to operate after that date with a minimum frequency tolerance of ±0.03%. However, the replacement of equipment requires that the current tolerance be met.

(4) Applicable to private operational fixed point-to-point microwave and stations providing MVDDS.

(5) For private operational fixed point-to-point microwave systems, with a channel greater than or equal to 50 KHz bandwidth, ±0.0005%; for multiple address master stations, regardless of bandwidth, ±0.00015%; for multiple address remote stations with 12.5 KHz bandwidths, ±0.00015%; for multiple address remote stations with channels greater than 12.5 KHz bandwidth, ±0.0005%.

(6) For stations authorized prior to March 11, 1997, transmitter tolerance shall not exceed 0.03%.

(7) The frequency tolerance for stations authorized on or before **[insert date 24 months after the rule becomes effective]** is 0.03%. Existing licensees and pending applicants on that date may continue to operate after that date with a frequency tolerance of 0.03%, provided that it does not cause harmful interference to the operation of any other licensee. For analog systems, if the channel bandwidth is greater than 30 MHz up to 50 MHz, the frequency tolerance standard will be 0.03%; if the channel bandwidth is 30 MHz or less, then the frequency tolerance standard will be 0.003%. This analog standard is conditional provided that harmful interference is not caused to digital stations operating within the 0.001% tolerance standards. If harmful interference is caused to stations operating with the more stringent standard, the onus shall be on the operators with the less stringent parameters to develop an engineering solution to the problem. For exceptions, see §101.147 and §101.507.

6. Section 101.109 is amended by revising the table in paragraph (c) to read as follows:

§101.109 Bandwidth.

* * * * *

(c) * * *

Frequency Band (MHz)	Maximum Authorized Bandwidth

* * *	* * *
21,200 to 23,600	50 MHz /1/ /4/
* * *	* * *

* * * * *

7. Section 101.111(a)(2)(i)-(iv) is amended to read as follows:

§101.111 Emission limitations.

* * *

96. (a)(2)(i) For operating frequencies below 15 GHz, in any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth: As specified by the following equation but in no event less than 50 decibels:

$A = 35 + 0.8(P - 50) + 10 \text{ Log}_{10} B$. (Attenuation greater than 80 decibels or to an absolute power of less than -13 dBm/1MHz is not required.)

where:

A = Attenuation (in decibels) below the mean output power level.

P = Percent removed from the center frequency of the transmitter bandwidth.

B = Authorized bandwidth in MHz.

Note: MVDDS operations in the 12.2-12.7 GHz band shall use 24 megahertz for the value of B in the emission mask equation set forth in this section.

97. (a)(2)(ii) For operating frequencies above 15 GHz, in any 1 MHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 250 percent of the authorized bandwidth: As specified by the following equation but in no event less than 11 decibels:

$A = 11 + 0.4(P - 50) + 10 \text{ Log}_{10} B$. (Attenuation greater than 56 decibels or to an absolute power of less than -13 dBm/1MHz is not required.)

(a)(2)(iii) In any 1 MHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \text{ Log}_{10}$ (the mean

output power in watts) decibels, or 80 decibels, whichever is the lesser attenuation. The authorized bandwidth includes the nominal radio frequency bandwidth of an individual transmitter/modulator in block-assigned bands. Equipment licensed prior to **[insert date 24 months after the effective date of this order]** shall only be required to meet this standard in any 4 kHz band.

(a)(2)(iv) The emission mask for LMDS and the 24 GHz Service shall use the equation in paragraph (a)(2)(ii) of this section and apply it only to the band edge of each block of spectrum, but not to subchannels established by licensees. The value of P in the equation is the percentage removed from the carrier frequency and assumes that the carrier frequency is the center of the actual bandwidth used. The emission mask can be satisfied by locating a carrier of the subchannel sufficiently far from the channel edges so that the emission levels of the mask are satisfied. The LMDS or 24 GHz emission mask shall use a value B (bandwidth) of 40 MHz, for all cases even in the case where a narrower subchannel is used (for instance the actual bandwidth is 10 MHz) and the mean output power used in the calculation is the sum of the output power of a fully populated channel. For block assigned channels, the out-of-band emission limits apply only outside the assigned band of operation and not within the band.

* * * * *

8. Section 101.113 is amended by revising the table in paragraph (a) to read as follows

§ 101.113 Transmitter power limitations.

(a) * * *

Frequency Band (MHz)	Maximum allowable EIRP (1)(2)	
	Fixed (dBW)	Mobile (dBW)
* * *	* * *	* * *
10,550 to 10,600 (5)	+55	. . . .
10,600 to 10,680 (5)	+40	
* * *	* * *	* * *

* * *

(5) The output power of a DEMS System nodal transmitter shall not exceed 0.5 watt per 250 kHz. The output power of a DEMS System user transmitter shall not exceed 0.04 watt per 250 kHz. The transmitter power in terms of the watts specified is the peak envelope power of the emission measured at the

associated antenna input port. The operating power shall not exceed the authorized power by more than 10 percent of the authorized power in watts at any time. Frequencies from 10,600-10,680 MHz are subject to footnote US265 in the Table of Frequency Allocations in Section 2.106 of the Commission's Rules. Stations authorized prior to [**insert effective date**] to exceed the 40 dBW limit may continue to operate at their authorized output power level indefinitely, provided that neither end point of the relevant link is relocated.

* * * * *

9. Section 101.115 is amended by removing paragraph (b) and redesignating paragraphs (c) through (g) as (b) through (f), and revising the table in redesignated paragraph (b) to read as follows:

§ 101.115 Directional antennas.

* * * * *

(b) * * *

Antenna Standards

Frequency (MHz)	Category	Maximum beamwidth to 3 dB points[1] (included angle in degrees)	Minimum antenna gain (dBi)	Minimum radiation suppression to angle in degrees from centerline of main beam in decibels						
				5° to 10°	10° to 15°	15° to 20°	20° to 30°	30° to 100°	100° to 140°	140° to 180°
* * *										
6,525 to 6,875[6]	A	1.5	n/a	26	29	32	34	38	41	49
	B	2.0	n/a	21	25	29	32	35	39	45
10,550 to 10,680[7]	A	3.5	33.5	18	24	28	32	35	55	55
	B	3.5	33.5	17	24	28	32	35	40	45
* * *										
21,200 to 23,600[7, 11]	A	3.3	33.5	18	26	26	33	33	55	55
	B	3.3	33.5	17	24	24	29	29	40	50
* * *										

* * *

/7/ For stations authorized or pending on **[insert effective date]**, the minimum radiation suppression for Category B is 35 dB in the 10,550-10,680 MHz band and 36 dB in the 21,200-23,600 MHz band for discrimination angles from 100° to 180°.

* * * * *

10. Section 101.117 is revised to read as follows:

§ 101.117 Antenna polarization.

Except as set forth herein, stations operating in the radio services included in this part are not limited as to the type of polarization of the radiated signal that may be employed. However, in the event interference in excess of permissible levels is caused to the operation of other stations as a result of employing other than linear polarization, the Commission may order a licensee to change its system polarization to mitigate the interference. No change in polarization may be made without prior authorization from the Commission. Unless otherwise allowed, only linear polarization (horizontal and vertical) shall be used. For LMDS systems, unless otherwise authorized, system operators are permitted to use any polarization within its service area, but only vertical and/or horizontal polarization for antennas located within 20 kilometers of the outermost edge of their service area.

11. Section 101.133 is amended by adding paragraph (e) to read as follows:

§ 101.133 Limitations on use of transmitters.

* * * * *

(e) Existing private operational fixed wireless licensees applying to become common carrier wireless licensees shall comply with all provisions of the Communications Act and the Commission's rules. Applicants must take all required filings, including FCC Form 601, and receive all necessary Commission approval prior to operating as a common carrier wireless licensee. The regulatory fee associated with FCC wireless application Form 601 is waived for applicants who are existing private operational fixed licensees seeking common carrier status, provided that such licensees have also complied with all other discontinuance requirements of Title II of the Act. Applicants are responsible for all other Commission regulatory fees.

12. The first sentence in paragraph (a) of Section 101.135 is revised to read as follows:

§ 101.135 Shared use of radio stations and the offering of private carrier service.

* * * * *

(a) Persons or governmental entities licensed to operate radio systems pursuant to subpart H of this part on any of the private radio frequencies set out in § 101.101 may share such systems with, or provide private carrier service to, any eligible entity for licensing under this part, regardless of individual eligibility restrictions, provided that the communications being carried are permissible under § 101.603.
* * *

* * * * *

13. Section 101.139 is amended by revising paragraph (a) and adding paragraph (g) to read as follows:

§ 101.139 Authorization of transmitters.

(a) Unless specified otherwise, transmitters used in the private operational fixed and common carrier fixed point-to-point microwave and point-to-multipoint services under this part must be a type that has been verified for compliance.

* * * * *

(g) After **[insert date 24 months after the effective date]**, the manufacture (except for export) or importation of equipment for operation in the 21,200-23,600 MHz band must meet:

(1) The 0.001% frequency tolerance requirement for digital systems in §101.107(a) or the 0.03-0.003% frequency tolerance for analog sytems; and

(2) For equipment employing digital modulation techniques, the minimum bit rate requirements of §101.141(a).

14. Section 101.141 is amended by revising paragraphs (a) and (a)(1) to read as follows:

§ 101.141 Microwave modulation.

(a) Microwave transmitters employing digital modulation techniques and operating below 25.25 GHz (except for MVDDS stations in the 12,200-12,700 MHz band) must, with appropriate multiplex equipment, comply with the following additional requirements:

(1) * * *

NOTE to (a)(1): Stations authorized prior to December 1, 1988 may install equipment after that date with no minimum bit rate. Equipment applied for or authorized prior to **[insert date 24 months after effective date]** in the 21.2-23.6 GHz band may be installed with no minimum bit rate. However, any digital equipment applied for after **[insert date 24 months after effective date]** and equipment replacing existing equipment in the 21.2-23.6 GHz band must meet the bit rate standard.

* * * * *

15. Section 101.147 is amended by removing the text of and reserving paragraph (k), and revising paragraph (a), the introductory text of (b), Table 3 of paragraph (b)(2), paragraph (r)(10), and paragraph (s) to read as follows:

§ 101.147 Frequency assignments.

(a) * * *

* * *		
2,450-2,500 MHz /12/		
* * *		

Notes

/1/ Frequencies in this band are shared with control and repeater stations in the Public Mobile Services and with stations in the International Fixed Public Radiocommunication Services located south of 25° 30' north latitude in the State of Florida and U. S. possessions in the Caribbean area. Additionally, the band 2160-2162 MHz is shared with stations in the Multipoint Distribution Service.

* * *

/12/ Frequencies in this band are available for assignment to the common carrier and private-operational fixed point-to-point microwave services.

* * *

/14/ Frequencies in this band are shared with stations in the fixed-satellite service.

* * *

/26/ Frequencies from 21.8-22.0 GHz and 23.0-23.2 GHz may be authorized for low power, limited coverage systems subject to the provisions of paragraph (s)(8) of this section.

* * * * *

(b) Subsections 1 - 5 and Tables 1 - 7 pertain to Multiple Address System (MAS) frequencies and Subsection 6 and Tables 8 - 11 pertain to point-to-point frequencies. (The remainder of this introductory paragraph applies only to MAS frequencies, except refer to Subsection 6 for point-to-point frequencies). Frequencies normally available for assignment in this service are set forth with applicable limitations in the following tables: 928-960 MHz Multiple address system (MAS) frequencies are available for the point-to-multipoint and point-to-point transmission of a licensee's products or services, excluding video entertainment material, to a licensee's customer or for its own internal communications. The paired frequencies listed in this section are used for two-way communications between a master station and remote stations. Ancillary one-way communications on paired frequencies are permitted on a case-by-case basis. Ancillary communications between interrelated master stations are permitted on a secondary basis. The normal channel bandwidth assigned will be 12.5 kHz. EA licensees, however, may combine contiguous channels without limit or justification. Site-based licensees may combine contiguous channels up to 50 kHz, and more than 50 kHz only upon a showing of adequate justification. Any bandwidth (12.5 kHz, 25 kHz or greater) authorized in accordance with this section may be subdivided into narrower bandwidths to create additional (or sub) frequencies without the need to specify each discrete frequency within the specific bandwidth. Equipment that is used to create additional frequencies by narrowing bandwidth (whether authorized for a 12.5 kHz, 25 kHz or greater bandwidth) will be required to meet, at a minimum, the $\pm$ 0.00015 percent tolerance requirement so that all subfrequencies will be within the emission mask. Systems licensed for frequencies in these MAS bands prior to August 1, 1975, may continue to operate as authorized until June 11, 1996, at which time they must comply with current MAS operations based on the 12.5 kHz channelization set forth in this paragraph. Systems licensed between August 1, 1975, and January 1, 1981, inclusive, are required to comply with the grandfathered 25 kHz standard bandwidth and channelization requirements set forth in this paragraph. Systems originally licensed after January 1, 1981, and on or before May 11, 1988, with bandwidths of 25 kHz and above, will be grandfathered indefinitely.

- * * * * *

(1) * * *

(2) Frequencies listed in this paragraph are designated for private internal use and are subject to site-based licensing.

(3)

Table 3-Paired Frequencies (MHz)

(12.5 kHz bandwidth)

Remote transmit	Master transmit
928.35625	952.35625
928.36875	952.36875
928.38125	952.38125
928.39375	952.39375
928.40625	952.40625
928.41875	952.41875
928.43125	952.43125
928.44375	952.44375
928.45625	952.45625
928.46875	952.46875
928.48125	952.48125
928.49375	952.49375
928.50625	952.50625
928.51875	952.51875
928.53125	952.53125
928.54375	952.54375
928.55625	952.55625
928.56875	952.56875
928.58125	952.58125
928.59375	952.59375
928.60625	952.60625
928.61875	952.61875
928.63125	952.63125
928.64375	952.64375
928.65625	952.65625
928.66875	952.66875
928.68125	952.68125
928.69375	952.69375
928.70625	952.70625
928.71875	952.71875

928.73125.....952.73125
928.74375.....952.74375
928.75625.....952.75625
928.76875.....952.76875
928.78125.....952.78125
928.79375.....952.79375
928.80625.....952.80625
928.81875.....952.81875
928.83125.....952.83125
928.84375.....952.84375

* * * * *

(k) [Reserved]

* * * * *

(r) * * * * *

(10) Special provision for low power systems in the 17-700-19700 MHz band: Notwithstanding other provisions in this rule part, and except for specified areas around Washington, DC, and Denver, Colorado, licensees of point-to-multipoint channel pairs 25-29 identified in paragraph (r)(9) of this section may operate multiple low power transmitting devices within a defined service area. New operations are prohibited within 55 km when used outdoor and within 20 km when used indoor of the coordinates 38^{o} 48' N/76^{o} 52' W and 39^{o} 43'N/104^{o} 46' W. The service area will be a 28 kilometer omnidirectional radius originating from specified center reference coordinates. The specified center coordinates must be no closer than 56 kilometers from any co-channel nodal station or the specified center coordinates of another co-channel system. Applicants/licensees do not need to specify the location of each individual transmitting device operating within their defined service areas. Such operations are available to private and common carriers and are subject to the following requirements for the low power transmitting devices:

* * *

(s) *21,200 to 23,600 MHz*: 50 MHz authorized bandwidth.

(1) 2.5 MHz bandwidth channels:

TRANSMIT (receive) (MHz)	RECEIVE (transmit) (MHz)
21601.25	22801.25
21603.75	22803.75
21606.25	22806.25
21608.75	22808.75
21611.25	22811.25

21613.75 ..... 22813.75
21616.25 ..... 22816.25
21618.75 ..... 22818.75
21621.25 ..... 22821.25
21623.75 ..... 22823.75
21626.25 ..... 22826.25
21628.75 ..... 22828.75
21631.25 ..... 22831.25
21633.75 ..... 22833.75
21636.25 ..... 22836.25
21638.75 ..... 22838.75
21641.25 ..... 22841.25
21643.75 ..... 22843.75
21646.25 ..... 22846.25
21648.75 ..... 22848.75
21651.25 ..... 22851.25
21653.75 ..... 22853.75
21656.25 ..... 22856.25
21658.75 ..... 22858.75
21661.25 ..... 22861.25
21663.75 ..... 22863.75
21666.25 ..... 22866.25
21668.75 ..... 22868.75
21671.25 ..... 22871.25
21673.75 ..... 22873.75
21676.25 ..... 22876.25
21678.75 ..... 22878.75
21681.25 ..... 22881.25
21683.75 ..... 22883.75
21686.25 ..... 22886.25
21688.75 ..... 22888.75
21691.25 ..... 22891.25
21693.75 ..... 22893.75
21696.25 ..... 22896.25
21698.75 ..... 22898.75
21701.25 ..... 22901.25
21703.75 ..... 22903.75
21706.25..... 22906.25
21708.75 ..... 22908.75
21711.25 ..... 22911.25
21713.75 ..... 22913.75
21716.25 ..... 22916.25
21718.75 ..... 22918.75
21721.25 ..... 22921.25
21723.75 ..... 22923.75
21726.25 ..... 22926.25
21728.75 ..... 22928.75
21731.25 ..... 22931.25
21733.75 ..... 22933.75

21736.25 ..... 22936.25
21738.75 ..... 22938.75
21741.25 ..... 22941.25
21743.75 ..... 22943.75
21746.25 ..... 22946.25
21748.75 ..... 22948.75
21751.25 ..... 22951.25
21753.75 ..... 22953.75
21756.25 ..... 22956.25
21758.75 ..... 22958.75
21761.25 ..... 22961.25
21763.75 ..... 22963.75
21766.25 ..... 22966.25
21768.75 ..... 22968.75
21771.25 ..... 22971.25
21773.75 ..... 22973.75
21776.25 ..... 22976.25
21778.75 ..... 22978.75
21781.25 ..... 22981.25
21783.75 ..... 22983.75
21786.25 ..... 22986.25
21788.75 ..... 22988.75
21791.25 ..... 22991.25
21793.75 ..... 22993.75
21796.25 ..... 22996.25
21798.75 ..... 22998.75
22301.25 ..... 23501.25
22303.75 ..... 23503.75
22306.25 ..... 23506.25
22308.75 ..... 23508.75
22311.25 ..... 23511.25
22313.75 ..... 23513.75
22316.25 ..... 23516.25
22318.75 ..... 23518.75
22321.25 ..... 23521.25
22323.75 ..... 23523.75
22326.25 ..... 23526.25
22328.75 ..... 23528.75
22331.25 ..... 23531.25
22333.75 ..... 23533.75
22336.25 ..... 23536.25
22338.75 ..... 23538.75
22341.25 ..... 23541.25
22343.75 ..... 23543.75
22346.25 ..... 23546.25
22348.75 ..... 23548.75
22351.25 ..... 23551.25
22353.75 ..... 23553.75
22356.25 ..... 23556.25

22358.75	23558.75
22361.25	23561.25
22363.75	23563.75
22366.25	23566.25
22368.75	23568.75
22371.25	23571.25
22373.75	23573.75
22376.25	23576.25
22378.75	23578.75
22381.25	23581.25
22383.75	23583.75
22386.25	23586.25
22388.75	23588.75
22391.25	23591.25
22393.75	23593.75
22396.25	23596.25
22398.75	23598.75

(2) 5 MHz bandwidth channels:

TRANSMIT (receive) (MHz)	RECEIVE (transmit) (MHz)
21602.5	22802.5
21607.5	22807.5
21612.5	22812.5
21617.5	22817.5
21622.5	22822.5
21627.5	22827.5
21632.5	22832.5
21637.5	22837.5
21642.5	22842.5
21647.5	22847.5
21652.5	22852.5
21657.5	22857.5
21662.5	22862.5
21667.5	22867.5
21672.5	22872.5
21677.5	22877.5
21682.5	22882.5
21687.5	22887.5
21692.5	22892.5
21697.5	22897.5
21702.5	22902.5
21707.5	22907.5
21712.5	22912.5
21717.5	22917.5

21722.5	22922.5
21727.5	22927.5
21732.5	22932.5
21737.5	22937.5
21742.5	22942.5
21747.5	22947.5
21752.5	22952.5
21757.5	22957.5
21762.5	22962.5
21767.5	22967.5
21772.5	22972.5
21777.5	22977.5
21782.5	22982.5
21787.5	22987.5
21792.5	22992.5
21797.5	22997.5
22302.5	23502.5
22307.5	23507.5
22312.5	23512.5
22317.5	23517.5
22322.5	23522.5
22327.5	23527.5
22332.5	23532.5
22337.5	23537.5
22342.5	23542.5
22347.5	23547.5
22352.5	23552.5
22357.5	23557.5
22362.5	23562.5
22367.5	23567.5
22372.5	23572.5
22377.5	23577.5
22382.5	23582.5
22387.5	23587.5
22392.5	23592.5
22397.5	23597.5

(3) 10 MHz bandwidth channels:

TRANSMIT (receive) (MHz)	RECEIVE (transmit) (MHz)
21205	22405
21215	22415
21225	22425
21235	22435
21245	22445

21255 22455
21265 22465
21275 22475
21285 22485
21295 22495
21305 22505
21315 22515
21325 22525
21335 22535
21345 22545
21355 22555
21365 22565
21375 22575
21385 22585
21395 22595
21405 22605
21415 22615
21425 22625
21435 22635
21445 22645
21455 22655
21465 22665
21475 22675
21485 22685
21495 22695
21505 22705
21515 22715
21525 22725
21535 22735
21545 22745
21555 22755
21565 22765
21575 22775
21585 22785
21595 22795
21605 /1/ ..... 22805 /1/
21615 /1/ ..... 22815 /1/
21625 /1/ ..... 22825 /1/
21635 /1/ ..... 22835 /1/
21645 /1/ ..... 22845 /1/
21655 /1/ ..... 22855 /1/
21665 /1/ ..... 22865 /1/
21675 /1/ ..... 22875 /1/
21685 /1/ ..... 22885 /1/
21695 /1/ ..... 22895 /1/
21705 /1/ ..... 22905 /1/
21715 /1/ ..... 22915 /1/
21725 /1/ ..... 22925 /1/
21735 /1/ ..... 22935 /1/

21745 /1/ ..... 22945 /1/
21755 /1/ ..... 22955 /1/
21765 /1/ ..... 22965 /1/
21775 /1/ ..... 22975 /1/
21785 /1/ ..... 22985 /1/
21795 /1/ ..... 22995 /1/
21805 /2/..... 23005 /2/
21815 /2/..... 23015 /2/
21825 /2/..... 23025 /2/
21835 /2/..... 23035 /2/
21845 /2/..... 23045 /2/
21855 /2/..... 23055 /2/
21865 /2/..... 23065 /2/
21875 /2/..... 23075 /2/
21885 /2/..... 23085 /2/
21895 /2/..... 23095 /2/
21905 /2/..... 23105 /2/
21915 /2/..... 23115 /2/
21925 /2/..... 23125 /2/
21935 /2/..... 23135 /2/
21945 /2/..... 23145 /2/
21955 /2/..... 23155 /2/
21965 /2/..... 23165 /2/
21975 /2/..... 23175 /2/
21985 /2/..... 23185 /2/
21995 /2/..... 23195 /2/
22005 23205
22015 23215
22025 23225
22035 23235
22045 23245
22055 23255
22065 23265
22075 23275
22085 23285
22095 23295
22105 23305
22115 23315
22125 23325
22135 23335
22145 23345
22155 23355
22165 23365
22175 23375
22185 23385
22195 23395
22205 23405
22215 23415
22225 23425

22235	23435
22245	23445
22255	23455
22265	23465
22275	23475
22285	23485
22295	23495
22305 /1/	23505 /1/
22315 /1/	23515 /1/
22325 /1/	23525 /1/
22335 /1/	23535 /1/
22345 /1/	23545 /1/
22355 /1/	23555 /1/
22365 /1/	23565 /1/
22375 /1/	23575 /1/
22385 /1/	23585 /1/
22395 /1/	23595 /1/

/1/ Alternate channels. These channels are set aside for narrow bandwidth systems and should be used only if all other channels are blocked.

/2/ These frequencies may be assigned to low power systems, as defined in subsection (8) of this paragraph.

(4) 20 MHz bandwidth channels:

TRANSMIT (receive) (MHz)	RECEIVE (transmit) (MHz)
21210	22410
21230	22430
21260	22460
21280	22480
21310	22510
21330	22530
21360	22560
21380	22580
21410	22610
21430	22630
21460	22660
21480	22680
21510	22710
21530	22730
21560	22760
21580	22780
21610 /1/	22810 /1/
21630 /1/	22830 /1/

21660 /1/	22860 /1/
21680 /1/	22880 /1/
21710 /1/	22910 /1/
21730 /1/	22930 /1/
21760 /1/	22960 /1/
21780 /1/	22980 /1/
21810 /2/	23010 /2/
21830 /2/	23030 /2/
21860 /2/	23060 /2/
21880 /2/	23080 /2/
21910 /2/	23110 /2/
21930 /2/	23130 /2/
21960 /2/	23160 /2/
21980 /2/	23180 /2/
22010	23210
22030	23230
22060	23260
22080	23280
22110	23310
22130	23330
22160	23360
22180	23380
22210	23410
22230	23430
22260	23460
22280	23480
22310 /1/	23510 /1/
22330 /1/	23530 /1/
22360 /1/	23560 /1/
22380 /1/	23580 /1/

/1/ Alternate channels. These channels are set aside for narrow bandwidth systems and should be used only if all other channels are blocked.

/2/ These frequencies may be assigned to low power systems, as defined in subsection (8) of this paragraph.

(5) 30 MHz bandwidth channels:

TRANSMIT (receive) (MHz)	RECEIVE (transmit) (MHz)
21235	22435
21285	22485
21335	22535
21385	22585
21435	22635

21485	22685
21535	22735
21585	22785
21635 /1/	22835 /1/
21685 /1/	22885 /1/
21735 /1/	22935 /1/
21785 /1/	22985 /1/
21835 /2/	23035 /2/
21885 /2/	23085 /2/
21935 /2/	23135 /2/
21985 /2/	23185 /2/
22035	23235
22085	23285
22135	23335
22185	23385
22235	23435
22285	23485
22335 /1/	23535 /1/
22385 /1/	23585 /1/

/1/ Alternate channels. These channels are set aside for narrow bandwidth systems and should be used only if all other channels are blocked.

/2/ These frequencies may be assigned to low power systems, as defined in paragraph (8) of this section.

(6) 40 MHz bandwidth channels:

TRANSMIT (receive) (MHz)	RECEIVE (transmit) (MHz)
21220	22420
21270	22470
21320	22520
21370	22570
21420	22620
21470	22670
21520	22720
21570	22770
21620 /1/	22820 /1/
21670 /1/	22870 /1/
21720 /1/	22920 /1/
21770 /1/	22970 /1/
21820 /2/	23020 /2/
21870 /2/	23070 /2/
21920 /2/	23120 /2/
21970 /2/	23170 /2/

22020 23220
22070 23270
22120 23320
22170 23370
22220 23420
22270 23470
22320 /1/ ..... 23520 /1/
22370 /1/ ..... 23570 /1/

/1/ Alternate channels. These channels are set aside for narrow bandwidth systems and should be used only if all other channels are blocked.

/2/ These frequencies may be assigned to low power systems, as defined in paragraph (8) of this section.

(7) 50 MHz bandwidth channels:

TRANSMIT (receive) (MHz)	RECEIVE (transmit) (MHz)
21225	22425
21275	22475
21325	22525
21375	22575
21425	22625
21475	22675
21525	22725
21575	22775
21625 /1/	22825 /1/
21675 /1/	22875 /1/
21725 /1/	22925 /1/
21775 /1/	22975 /1/
21825 /2/	23025 /2/
21875 /2/	23075 /2/
21925 /2/	23125 /2/
21975 /2/	23175 /2/
22025	23225
22075	23275
22125	23325
22175	23375
22225	23425
22275	23475
22325 /1/	23525 /1/
22375 /1/	23575 /1/

/1/ Alternate channels. These channels are set aside for narrow bandwidth systems and should be used only if all other channels are blocked.

/2/ These frequencies may be assigned to low power systems, as defined in paragraph (8) of this section.

(8) *Special provisions for low power, limited coverage systems in the 21.8-22.0 GHz and 23.0-23.2 GHz band segments*. Notwithstanding any contrary provisions in this part, the frequency band segment 21.8-22.0 GHz paired with the frequency band segment 23.0-23.2 GHz may be authorized for low power, limited coverage systems subject to the following provisions:

(i) The maximum EIRP shall be 55 dBm and the rated transmitter output power shall not exceed 0.100 Watts;

(ii) In the band segments from 21.8-22.0 GHz and 23.0-23.2 GHz, the frequency tolerance for stations authorized on or before **[insert date 24 months after effective date]** is 0.05%. Existing licensees and pending applicants on that date may continue to operate after that date with a frequency tolerance of 0.05%, provided that it does not cause harmful interference to the operation of any other licensee. The frequency tolerance of §101.107(a) shall apply to stations applied for after **[insert date 24 months after effective date]**;

(iii) The maximum beamwidth shall not exceed 4 degrees;

(iv) The sidelobe suppression criteria contained in §101.115 of this part shall not apply, except that a minimum front-to-back ratio of 38 dB shall apply;

(v) Upon showing of need, a maximum bandwidth of 50 MHz may be authorized per frequency assigned;

(vi) Radio systems authorized under the provisions of this section shall have no more than five hops in tandem, except upon showing of need, but in any event the maximum tandem length shall not exceed 40 km (25 miles);

(vii) Interfering signals at the antenna terminals of station authorized under this section shall not exceed -90 dBm and -70 dBm respectively, for co-channel and adjacent channel interfering signals; and

(viii) Stations authorized under the provisions of this section shall provide the protection from interference specified in **§**101.105 to stations operating in accordance with the provisions of this part.

* * * * *

16. Section 101.507 is revised to read as follows:

§ 101.507 Frequency stability.

The frequency stability in the 10,550-10,680 MHz band must be $\pm$0.0001% for each DEMS Nodal Station transmitter and $\pm$0.0003% for each DEMS User Station transmitter. The frequency stability in the 24,250-25,250 MHz bands must be $\pm$0.001% for each Nodal Station transmitter and $\pm$0.003% for each User Station transmitter.

17. Section 101.603 is amended by revising paragraph (b)(1) to read as follows:

§ 101.603 Permissible communications.

* * * * *

(b) * * *

(1) Render a common carrier service of any kind. However, licensees are allowed to lease excess capacity to common carriers. In addition, Specialized Mobile Radio (SMR) licensees reclassified by the Commission as Commercial Mobile Radio Services (CMRS), that were formerly private land mobile radio service providers, may continue to utilize private operational fixed microwave systems licensed prior to [**insert effective date**] for their land mobile connecting facilities.

* * * * *

18. Section 101.803 is amended by removing paragraph (e) and redesignating paragraphs (f and g), and revising paragraph (a) and note 8 in paragraph (d) to read as follows:

§ 101.803 Frequencies.

(a) Frequencies in the following bands are available for assignment to television pickup and television non-broadcast pickup stations in this service:

* * *

14,200 to 14,400 MHz.	/8/
21,200 to 22,000 MHz.	/1/ /2/ /4/ /5/
22,000 to 23,600 MHz.	/1/ /2/ /5/

* * *

* * * * *

/5/ This frequency band is shared with the common carrier and private-operational fixed point-to-point microwave services.

* * * * *

/8/ The maximum power for the local television transmission service in the 14.2-14.4 GHz band is +45 dBW, except that operations are not permitted to point within 1.5 degrees of the geostationary orbit.

* * * * *

(d) * * *

/8/ This frequency band is shared with the common carrier and private-operational fixed point-to-point microwave services.

* * * * *

19. Section 101.809 is amended by revising paragraph (d) to read as follows:

§ 101.809 Bandwidth and emission limitations.

* * * * *

(d) Maximum bandwidths in the following frequency bands must not exceed the limits set forth below:

Frequency band (MHz)	Maximum Authorized Bandwidth (MHz)
3,700 to 4,200	20 /1/
5,925 to 6,425	30 /1/
6,425 to 6,525	25
10,700 to 12,200	40 /1/
13,200 to 13,250	25
21,200 to 23,600	50 /1/

/1/ The maximum bandwidth that will be authorized for each particular frequency in this band is detailed in the appropriate frequency table in §101.147.

* * * * *

20. Section 101.815(a)(1) is revising to read as follows:

§ 101.815 Stations at temporary fixed locations.

(a) * * *

(1) When a fixed station is to remain at a single location for less than 6 months, the location is considered to be temporary.

* * * * *

21. Section 101.1325 is amended by revising subsection (a) to read as follows:

§ 101.1325 Construction requirements.

* * * * *

(a) Incumbent and site-based licenses are subject to the construction requirements set forth in § 101.63.

* * * * *

22. Section 101.1333 is amended by revising subsection (c) to read as follows:

§ 101.1333 Interference protection criteria

* * * * *

(c) EA licensees are prohibited from exceeding a signal strength of 40 dBμV/m at incumbent licensees' 40.2 kilometer (25-mile) radius composite contour specified in § 101.1331(c).

* * * * *

APPENDIX C: Final Regulatory Flexibility Analysis (for *Report and Order*)

1. As required by Section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603 (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Part 101 MO&O and NPRM* in this proceeding.[1] The Commission sought written public comments on the proposals in those proceedings, including on the IRFA. The Commission's Final Regulatory Flexibility Analysis (FRFA) for the *Report and Order* (*R&O*) conforms to the RFA.

A. Need for and purpose of this action.

2. This *R&O* furthers the Commission's continuing efforts to eliminate and/or modify regulations in Part 101 that are duplicative, outmoded, or otherwise unnecessary. This action will (1) clarify the existing rules so they are easier to understand, (2) facilitate the awarding of licenses more quickly, and (3) eliminate unnecessary regulation.

B. Summary of significant issues raised by public comments in response to the IRFA.

3. Commenters did not file any comments in direct response to the IRFA. Some commenters, however, raised issues that may be of particular concern to small entities. The specific suggestions, modifications, and deletions have been discussed above. We have reviewed the comments to determine the impact of the decisions set forth herein on small entities.

C. Description and estimate of the number of small entities to which the rules apply.

4. The rules will affect all common carrier and private operational fixed microwave licensees who are authorized under Part 101 of the Commission's Rules. The Commission has not developed a definition of small entities applicable to these licensees. Therefore, the applicable definition of small entity is the definition under the Small Business Administration (SBA) rules for the radiotelephone industry, which provides that a small entity is a radiotelephone company employing fewer than 1,500 persons.[2] The 1992 Census of Transportation, Communications, and Utilities, conducted by the Bureau of the Census, which is the most recent information available, shows that 12 radiotelephone firms out of a total of 1,178 such firms which operated during 1992 had 1,000 or more employees.[3] With respect to these entities, we note that the effect will be to lessen time and input and thereby any costs associated with processing their applications.

D. Description of projected reporting, recordkeeping, and other compliance requirements.

5. There is only one new reporting requirement adopted in this *R&O*. We are amending Section 101.31(b) to require that an application for authority to operate a fixed station at temporary locations must

[1] *Part 101 MO&O and NPRM*, 15 FCC Rcd at 3176-77, Appendix B.

[2] 13 C.F.R. § 121.201, Standard Industrial Classification (SIC) Code 4812.

[3] U.S. Bureau of the Census, U.S. Department of Commerce, 1992 Census of Transportation, Communications, and Utilities, UC92-S-1, Subject Series, Establishment and Firm Size, Table 5, Employment Size of Firms: 1992, SIC Code 4812 (issued May 1995).

specify the precise geographic area within which the operation will be confined. We will require that the area specified must be defined as a radius of operation about a given state or states, latitude/longitude, or as a rectangular area bounded by upper and lower lines of latitude and longitude. This requirement previously was in our rules and inadvertently deleted during recodification. Nothing in the record indicates that the requirement was, or will be, burdensome to small entities. Other than this, we have amended the fixed microwave rules to make them less burdensome and clarified the language of some of the rules.

E. Significant alternatives considered.

6. The comments offered various alternatives for modification of proposals contained in the notice of proposed rule making portion of the *Part 101 MO&O and NPRM*. An additional alternative was to maintain the *status quo*. Generally, the comments supported the proposals, but offered changes to make the rules more clear and accurate. Some of the suggested modifications are contained in the final rules. Aside from the amendment of Section 101.31 highlighted above, the rules impose no additional regulatory burdens. The Commission will continue to examine alternatives in the future with the objective of eliminating unnecessary regulations and minimizing economic impact on small business entities.

F. Commission's outreach efforts to learn of and respond to the views of small entities pursuant to 5 U.S.C. § 609.

7. In this proceeding, the Commission has taken several steps to learn and respond to the views of small entities. Throughout the course of this proceeding, representatives of the Public Safety and Private Wireless Division (PSPWD) of the Wireless Telecommunications Bureau have had numerous discussions with the representatives of small entities. The staff of the Licensing and Technical Analysis Branch of the PSPWD in Gettysburg, Pennsylvania routinely respond to questions posed by the representatives of small entities and, when appropriate, refer issues arising from those questions to PSPWD staff in Washington, D.C. for determination of whether a rule change or clarification will benefit the small entities posing the questions.

G. Report to Congress.

8. The Commission shall send a copy of this Final Regulatory Flexibility Analysis, along with the *Report and Order*, in a report to Congress pursuant to Section 251 of the Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C. § 801(a)(1)(A). A copy of this FRFA will also be published in the Federal Register.

APPENDIX D: Licensed Stations Operating Above 40 dBW in 10.6-10.68 GHz Band

Licensee	Call Sign	Latitude	Longitude	City	State	Path#	Frequency	EIRP in dBW
State of California	WPOQ690	38-43-10	120-59-26	Rescue	CA	3	10653.125	40.7
Hawaii Public Radio Inc	WNES487	21-23-51	158-06-00	Nanakuli	HI	2	10623.750	40.5
HLD Cellular Corp.	WPQT456	38-22-48	89-11-27	Richview	IL	1	10637.500	42.9
Lewiston Celltelco Partnership	WLV921	44-05-07	70-11-30	Lewiston	ME	1	10628.125	44.5
Los Angeles SMSA Ltd Partnership	WPNJ838	35-06-14	115-46-36	Baker	CA	4	10628.750	40.9
Los Angeles SMSA Ltd Partnership	WPNL371	35-26-10	115-55-29	Baker	CA	1	10678.750	40.9
Los Angeles SMSA Ltd Partnership	WPNL372	35-45-59	116-19-43	Baker	CA	1	10613.750	40.9
Los Angeles SMSA Ltd Partnership	WLN479	33-55-27	116-36-59	Whitewater	CA	1	10633.125	43.6
Los Angeles SMSA Ltd Partnership	WLV362	34-16-04	118-14-13	La Cresenta	CA	21	10641.250	42.5
PacificCorp	WPJD691	40-18-45	111-39-22	Orem	UT	1	10629.375	40.9
Texaco Communications, Inc.	WNTJ926	34-18-08	119-16-09	Ventura	CA	3	10638.750	40.5